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Address

THE STATUS OF THE CHILD.

CHAIRMAN'S ADDRESS BEFORE THE SECTION ON DISEASES OF CHILDREN AT THE FIFTY-EIGHTH ANNUAL SESSION, AMERICAN MEDICAL ASSOCIATION, 1907.

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To all who have given serious thought on conditions of society as they exist in our country to-day, certain changes in our ways of living seem imperative if the integrity of the nation is to be preserved. More and more numerous are the bubbles which, rising on the surface of our civilization, denote the workings of ferments beneath. The nation is already somewhat taxed with the burden of caring for, while protecting itself against, an army of defective, degenerate and unstable citizens.

The rapid increase in such members continuing, society as a whole will be vitiated, and sooner or later our people will be compelled to give way to some newer, cleaner and stronger power. To live unwarned by the experiences of other, older and past civilizations, and to blind ourselves to the evidences of decay within us is not optimism but folly! To insist that if our nation is to endure, further deterioration in the race must be stopped is not pessimism but self-preservation!

Without a stalwart and vigorous citizenship our natural resources, domain, a structural navy and a numerical army will not avail in keeping the nation to the fore among the world's powers. Our people must learn the patriotism, the wisdom and the foresight of so safeguarding our children that an oncoming generation of morally, mentally and physically equipped citizens will ever be assured to the nation.

The dangers in modern society which beset the child are many and various. Some of these are so intimately connected with home life that they will be found easier of correction by education and by wise council than by enactments of law. By virtue of their relationship to the family, physicians, if they but acquaint themselves with certain needs, are in a position to render a great and lasting service to their country. It is then to certain phases of our home life as they reflect on child interests that I wish to invite your attention.

THE UNBORN CHILD.

The position assumed by modern society with reference to the unborn child is a subject which has proved so inviting to sentimentalists that physicians as a rule discuss it reluctantly. But the possible physical effects on our women and our children of a widespread revolt against maternity is a question that medical men, no matter how much against their liking, must consider and answer. A countless number of our young women, even before marriage, are entertaining ideas, notions rather, regarding the hardships and taxations incident to child rearing.

Thousands of them at the time of marriage have these notions still further exaggerated by the intermeddling of mothers and friends. Now, too, a certain kind of instruction is given which, since its purpose is to prevent motherhood, precludes any education that would fit these young women for that motherhood. I know of nothing more nerve-wasting, nothing more cruel, than the way newly-married girls are beset with older married women, bringing ghosts of child-bed and bugaboos of child-care with which to haunt the bridal chamber. Can we wonder that many of them, who were normal, mentally, physically and morally healthy before marriage, are changed into unhappy, discontented, irritable and hysterical wives, fit neither for wifehood nor motherhood?

A great number of women live in a state of uneasiness and of absolute dread with reference to maternity. Restless, they display their activities in various freakish and faddish ways. They are not perverse, but, by contact with distorted ideas concerning their natures they are made selfish and unreliable. There may be some of us who are inclined to believe that under certain circumstances a limited family would solve perplexing problems of existence. But no matter how often offered as pleas, economic and like considerations do not enter into the studied attempts at preventing conception. The woman who practices these modern arts is actuated by personal fear or by personal selfishness or by both. With her it is not a question of limiting the number of children—she wants no child at all.

Can the woman who accepts maternity only when the miscarriage of plans compels acceptance ever satisfactorily perform maternal functions and duties? Is it enough to have the mother become reconciled only when the child is born, and only then to try to do her best? These are not mere academic questions, but are now of such import to the nation that physicians have no right to allow them to be treated only by the mawkishly inclined.

Neither will it do to trust to maternal instinct, whatever that may be, to overcome certain deficiencies in the education and in the preparation of a woman for maternity. An instinct which permits a woman to bestow her affections with equal enthusiasm, if not depth, on a Teddy bear or a poodle dog, and under other circumstances on a baby, is not sufficiently divine to be depended on to offset any great ignorance with which she may be endowed. Maternal instinct can not recover the nerve energy lost "in the fear, the anguish, and the unwillingness with which a child may be conceived." Maternal instinct may create in the woman a desire to nurse her offspring, but it can not produce the life-giving milk in a body which has been abused and maltreated and lent so grudgingly to the purposes of creation. Maternal instinct is a very beautiful, a very poetic thing, but it is neither knowledge, nor nerves, nor nourishment.

THE RIGHTS OF THE EXPECTANT MOTHER.

In our efforts to reduce infant morbidity and infant mortality we do not start far enough back. Physicians, in this country at least, do not give enough consideration to conditions that affect our women as mothers. Time spent in crusading for a cleaner milk supply and in educating mothers how to prepare and how to care for market milk is not to be called wasted. But I am convinced that whenever we shall devote as much time and attention to teaching expectant mothers how best to prepare and how best to live for the performance of natural feeding, then our efforts will be as encouraging as they will be consistent.[1]

Aside from the influence of exaggerations arising in the indelicate interchange between women of confidences relating to domestic and private life, two things tend to make motherhood burdensome and do lend some reality to the hardships of rearing children. The first of these is the very common failure among mothers to furnish a sufficient or a fit supply of natural food. Compared with the lusty, breast-fed baby that spends most of his time in sleep and the remainder in nursing and in playfulness, the puny, never-satisfied, ever-squalling bottle-fed infant is a nuisance; none the less so because the instructions for his feeding have probably been given with such terrifying minutiæ and unnecessary fussiness that the mother can only follow them with uneasiness and uncertainty.

Again—and to this, too, I have already alluded—our women lack any education which would give them an understanding of child needs. Unfortunately the child has certain needs which, misinterpreted or uncomprehended, will characterize his career with events, time-exacting, nerve-trying and heart-distressing. Not to speak of the benefits that would accrue to the child, proper education and proper preparation of the expectant mother would be fairer and would make her later duties less hard.

DIVORCE AND EXCESSIVE LUXURY.

It is not surprising that the larger percentage of divorces occurs in childless marriages. The surprising and distressing feature is that there is still a large number of marriages in which child rights are entirely ignored or are not sufficiently considered to keep the family intact. Without entering into a detailed study of the complex causes that have brought about the wreckage of 1,400,000 homes in the United States within the last twenty years, it is seen at once that a home with "frenzied finance" on the one hand and restless indolence on the other is encompassed by much that is favorable to a history of unhappiness. With divorce so rampant, we do not wonder that patriotic men are aroused and are putting home life to an analysis.

Ex-President Cleveland has recently written this message[2] to the American people:

> We have fallen on a time in our national life when it will be well for us to look to the simplicity of our homes. Of course it will not do to inveigh indiscriminately or in wholesale fashion against our country's legitimate advance, which has greatly increased the comforts and reasonable luxury of domestic life. Our plea should be for the subordination of all this to a standard of simplicity which will safeguard the integrity of the home without curtailing the greater comfort and decent living of latter day changes.

In the British race degeneration for the most part has been the result of poverty and of poor living. The hooligan is the combined product of the factory system and the slums. He is an unmoral rather than an immoral animal. It is his hopelessness and his inertia that make him so absolutely worthless and, therefore, vicious to society.

In America, however, the menacing member of society is not always from the ranks of the poverty-stricken. A large number of unstables and degenerates come from homes of excessive wealth and luxury. In some of these homes parents are too busy in money-making or in giddy social strife to outrank rankness to give either love or heed to the child.

In a larger number, however, parental affection is as deep as anywhere, but parental responsibility seems to begin and end in silly indulgence of the child. First "pap-fed," then pampered and spoiled, the child grows up without discipline to desires and without knowledge of his relations to the rest of society. Thus he is so handicapped by home training, or rather by lack of it, that the chances are against him in attaining good and useful citizenship. He is more likely to become where he dares a bully, but otherwise a weakling on whom is easily fixed, one or all, drunkennness, licentiousness, criminality, insanity and suicide.

ANOTHER KIND OF CHILD LABOR.

Thoughtless care of the child is not confined to any one class of our people. Every stratum of our society shows some of its markings. That boys be educated in thrift and that they be taught to earn their spending money or in part their living money may be well enough, but the kind of employment a child is allowed to accept ought to be selected by parents with care, and the expenditure of his wages ought to be supervised with prudence, though not with niggardliness.

One day last summer I saw an 11-year-old boy, whom I knew very well, entering a house of prostitution. The boy's father, who holds a responsible and lucrative clerical position, was surprised and shocked when informed of this fact. It had never before occurred to him that his boy, in accepting employment with a messenger service during the summer vacation, would be sent to such places.

The man who shoes my horse employs six assistants, owns his home and has a neat bank account. This man permits his 13-year-old boy to work on afternoons and Saturdays in a livery stable in the capacity of a "lead boy." The work itself is easy and healthy. Delivering and returning horses allows him outdoor exercise, has an element of danger that a boy likes and that is just sufficient to cultivate confidence in himself and gives him an insight into the wisdom of treating a dumb animal humanely. But a considerable time still must be spent by the boy in the stable, where his associates are a lewd, profane, drinking and gambling set of negroes who keep out of jail only through the protection of their employers.

A few days ago I saw in a lunch room a nicely dressed little fellow, not a minute past 6 years, sipping a huge cup of black coffee. The youngster was so exceedingly bright and talkative that he attracted attention at once. From one of the waiters I learned that this child, this *baby*, drank as many as three cups of coffee in one afternoon; that he sold papers, and that his customers were

1. After writing this paper, I found that an English writer, Sykes (Lancet, April 5, 1907), had very similarly expressed these ideas: "For a long time past it has struck me that the promiscuous distribution of leaflets instructing mothers how to hand-feed their infants is beginning at the wrong end, and even prefixing a few words of advice as to breast feeding does not correct the preponderant details of advice as to how to avoid breast feeding."

2. The Honest American Marriage, Ladies' Home Journal, Oct. 1906.

the drummers who patronized a nearby hotel. This little one's father (I made it a point to find out) is an able-bodied carpenter making good wages. He owns a suburban home and hires a cook, although his family is small and his wife is in perfect health.

I have no apology to offer for citing these cases. To me they are of the greatest significance. They are only isolated in the positiveness of my knowledge that these parents in no way stand in need of the wages for which they are willing to expose their children to many obvious dangers.

Last month, in the city of Birmingham, a young man was sentenced to six years in the penitentiary for embezzling a large sum of money from a bank. Ten years before the commital of the crime, when only 15 years old, this boy was employed as a marker in a bucket-shop. In the midst of gamblers and surrounded by their influences he spent his adolescence—that period of life in which impressions sing deepest and in which there is greatest susceptibility to influence. Later he entered the service of a bank, where he was rapidly promoted until he was made assistant cashier and, at the age of 25, stole $200,000. At the trial the young man's lawyers admitted his theft, but plead not guilty "on account of insanity." The only established evidence of his insanity was an irresistible or rather unresisted desire to gamble in the stock market. His father, a leading citizen and prominent attorney, had the temerity to address the jury in behalf of the criminal which he had helped to make by neglect of parental duty.

CHILD LABOR IN FACTORIES.

Philanthropists, humanitarians and others have raised a far-reaching cry against child-labor in factories and in sweatshops. God knows their indignation is righteous enough! The refined barbarity with which these little ones are murdered makes a humane man almost regret the passing from civilization of cannibalism, which, at least, had the comparative virtues of quick and honest dispatch. But the greater number of these children are so born that, even were their liberty uninterfered with by factories, their usefulness to society and to the state would be limited.

In the north they are the children of a class of immigrants that only years of training and of education can make representative in their citizenship. In the southern mills they are the children of a class of people that has lived for a century in contact with civilization without becoming a part of it. Within this class are embraced the "moonshiners," the "feudists," the "white-caps," the "train-wreckers," the "church-burners," etc., who, living at enmity with law, have done so much to bring disgrace on the fair name of the south. Since little has been done to reclaim them, these people, the so-called "poor white trash," are not to be called hopeless, but certainly it will be many years before they will adapt themselves to the greater works of our civilization. Though we work then for humanity and for Christianity in freeing these children from their bondsmen, we can not by that act alone add much to the stability of the nation. Orphans and children deserted or neglected by parents are now being lodged, fed, clothed and educated by society. Crippled and blind children, even those of the poor, are now trained and educated for self-support. Backward and defective children are being humanely placed in separate classes from the better mentally and physically equipped children. They are no longer forced to compete where defeat and humiliation are certain. Youthful criminals no longer have criminality fixed on them by association with older and more hardened offenders. They are now placed under restraint so gentle and are surrounded by influences so uplifting that the best side of their natures is stimulated to outgrow proclivities to evil.

Physicians, since they have aided no little in bringing them about, feel a special pride in these reforms. But if our zeal and our enthusiasm are to end here then it were wiser to revert to the customs of that ancient people who, to guard themselves against deterioration, could hit on no more ingenious plan than to do away with weak and defective children. Let us continue to spend time and money in behalf of these unfortunates, but let us not deceive ourselves into believing that these are the boys and girls who will to-morrow shape the history of the nation.

Not they, but the children we know personally, the children in the homes we visit professionally, are the ones who will become the leaders and the representative citizens of the republic; into their keeping will be placed the destiny of the country. Therefore, let our special care be for them, and let us not underestimate the less glaring dangers that may be threatening them.

I have already mentioned some of the insidious social evils that, creeping on us, are endangering our children. If time permitted there are others of which I should like to speak. Before closing there is one from which I can not withhold brief reference.

Twenty years ago and later obscene literature in every form was debarred, at least from our homes. Even today if it came to us in any other form the obscenity of the modern newspaper would be cast out with crimson indignation. And yet the write-up of a recent notable trial, teeming though it did with nauseating detail of indecent situations, was followed closely by children all over the land, who awaited hungrily and greedily for the next issue.

That old dodge of the press, "We print what the people want," is no more lofty than the defense of dive and brothel-keepers. Examine the Sunday edition, baited for children with comic supplement, and then go make a Fourth of July speech on this glorious country of ours, in which the freedom of press shall never, no never, be restricted, though our children be damned.

Original Articles

TEN YEARS EXPERIENCE IN THE TREATMENT OF SYPHILIS BY THE INTRAMUSCULAR INJECTION OF INSOLUBLE MERCURIALS.*

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The dangers of a premature judgment of the value of a therapeutic method is abundantly proved by the experience of the past few years, and should warn us that excessive optimism may be as harmful as the therapeutic nihilism that was formerly the fashion. Tuberculin, for instance, went up like a rocket and has come

* Read in the Section on Cutaneous Medicine and Surgery of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

down like its stick. The erysipelas toxins cured many diseases at first, but seem now to have lost much of their efficacy. The Roentgen rays were but yesterday the vaunted and unfailing remedy for all manner of recalcitrant affections; to-day they are a therapeutic agent of increasingly limited applicability, and with disadvantages and dangers to which the many suits for damages from burns are attracting medical attention. Conservatism of statement and a judicious reticence are often more valuable than careless optimism.

It is, therefore, only during the last two or three years that I have said much in public concerning the method of mercurial administration in syphilis that is the subject of this paper. I have used it, however, steadily and almost exclusively, both in public and in private practice, since early in the nineties. In three hospitals in New York it has been the regulation treatment during my terms of service, as also in the various dispensary services that have been under my control. It is safe to say that almost all those who have had opportunity to witness its administration and effects—internes, assistants and visitors—have become its enthusiastic advocates, and its reception by the profession at large during the last two years has been not less cordial. I have even had the satisfaction of hearing many of our older leaders in syphilography state that they have always advocated and employed the injection treatment. For the method is not new, but old; Scarenzio, as long ago as the middle of the last century, injected calomel to cure the luetic disease.

On the basis, then, of a not inconsiderable experience extending over a term of years, I feel justified in publishing the conclusions to which I have arrived. I shall not attempt to give figures as to the number of cases treated or injections administered. Using the method daily, as I do, as a part of the regular office and hospital work, and without any special intentions of publication, such records would be difficult to collect. I average two or three injections every day in private work, and I can safely say that, either personally or under my direction, between one and two thousand injections have been given annually for a number of years past. The conclusions hereinafter detailed are, therefore, neither theoretical nor the result of isolated observations; they are the epitome of daily experience for a long time past, in all manner of patients and under all kinds of conditions.

It is, of course, with the usual ingestion method of administering mercury that the intramuscular injection method must compete. Inunctions have never obtained the vogue here that they have had, and still have, in Germany; they have practically been rejected here as being too troublesome and too offensive for routine treatment. Other methods, such as fumigations, baths, mercolint pads, etc., are either special methods useful only in isolated cases, or therapeutic curiosities that have never obtained any general professional indorsement.

The very first questions to be asked are, therefore, these: Is the method any better than the ordinary one? And if so, are its advantages sufficiently great to warrant the regular employment of a treatment that is a little more troublesome than writing out a prescription? And then follows the query: Should it be used as the regular treatment in all our cases of syphilis? My answer to all three questions is, unhesitatingly, yes; and it is based on the considerations that follow.

The rapidity of action of the drug when administered hypodermatically is surprising, especially on the earlier and acuter manifestations of luetic intoxication. The patient suffering from violent cephalgic or osteocopic pains obtains relief in a very few hours; in fact I have had patients repeatedly affirm that they have felt the good effects of the injection on subjective symptoms of this kind in an hour or two. Objectively there distinct signs of improvement by the second day, or, at most, by the third; general eruptions commence to fade, and broken down lesions, primary, secondary or tertiary, show decided marks of retrogression.

On the later lesions the action of the drug when administered in this way is, of course, somewhat slower, but it is still very much more rapid than when given by the mouth. Gummatous infiltrations of the skin and subcutis, periosteal and bone affections, etc., usually show distinct betterment in a few days and after a single injection. A point of prime importance is the fact that the more obstinate and relapsing of these later manifestations, such as the palmar and plantar syphiloderms, mucous patches, etc., react, and sometimes with surprising rapidity, though they may have proved entirely recalcitrant to mercury administered by the mouth or even to inunctions. Thus I have under my care at the present moment a physician with a very obstinate unilateral plantar squamous lesion, on which mercury by the mouth to any amount, and inunctions to any extent, have no effect at all; yet which commenced to improve at once under the injections. It is worthy of note in passing that this case is the only one that I have encountered in which the patient, before he decided to place himself in my care, administered the intragluteal injections to himself.

As to the employment of the injections in such probably specific affections as tabes and general paralysis, in which Laredde has reaped such promising results, I have little satisfactory to say. These cases generally remain in the hands of the general practitioner or the professed neurologist. Of the few that I have treated some have improved for a time, but I can not claim to have obtained the marked and permanent betterment noted by the French authority.

An important factor in estimating the efficiency of a syphilis treatment is the frequency of the occurrence of what the Germans call "relapses;" does the intramuscular injection of the insoluble mercurials afford any greater certainty of the non-reappearance of active symptoms than the ordinary methods? It is my positive belief that it does. The regular and usual course of the disease—and I make this statement on the basis of private cases that have been carefully watched through the entire three years and more of treatment—is that when once the patient is under the full injection doses there are no further disease manifestations at all. In many cases, and especially when vigorous treatment is begun early, there is a rapid subsidence of the active symptoms, and from then on apparently perfect subjective and objective good health. Joint pains, cephalalgia, pharyngitis, alopecia, etc., are slight and fugitive, if they appear at all, and they yield very readily to a slight increase in the intensity of the medication. The more serious late secondary manifestations, the tubercular and pustular syphiloderms, extensive pharyngeal lesions, iritis, etc., are practically not seen at all in private and carefully treated cases. My records show only one noteworthy exception in which a serious outbreak occurred while the patient was under vigorous treatment. This was in a physician in whom a most obstinate and relapsing iritis persisted during the entire first year and a half of the disease, and which long resisted all the

remedial measures that a well-known ophthalmologist, who cared for the case with me, and I could apply. Here I think that the unfavorable influences of overwork and worry, together with the somewhat insufficient treatment caused by the necessarily irregular life of a busy general practitioner, were the direct occasions of the failure. I am fully aware of the fact that the type of syphilis that we see to-day, especially in private practice, is much less malignant than it used to be, and yet the almost complete absence from my records of any of the commoner severer complications of the early luetic infection is noteworthy. So much is this the case that the main practical difficulty that I have found with the treatment has arisen from the fact that it becomes hard, after a time, to convince many patients who feel perfectly well that there is still anything the matter with them and that they still need treatment.

As regards the "relapses" which we class as tertiary in ordinary parlance, we know that they occur in only a small proportion of all cases, and in a still smaller proportion of those that have been properly treated. I do not think that more than 10 per cent. show them, though figures varying from 4 per cent. to 40 per cent. are given by various authorities. Of course no individual observations in a restricted clientele, and for a moderate term of years, can have much weight on this point. I can only say that I have not seen any tertiary manifestations at all in the comparatively few cases that I have had occasion to follow up.

Practically the same is true of hereditary transmission. A number of my cases have married; some have had children. In a few very careful cases the father has been put on a renewed course of treatment during the first year of his married life, and I have treated one or two wives of my old syphilitics during the first gestations, by mouth, and, of course, without their knowing the object of the medication. Neither in these cases nor in the others that have had no subsequent medication has anything occurred to point to persistence and hereditary transmission of the virus. I believe that these patients are safer from dangers of this kind than are those who have merely had the ordinary ingestion treatment. It is certainly rational to assume that a treatment that so quickly removes all evidences of active luetic poisoning, and that so radically prevents the supervention of the usual and more immediate sequelæ of the disease, is just as effective in hindering its hereditary transmission.

Turning now for a few moments from therapeutic to more purely personal considerations, my experience has been almost uniformly to the effect that the patients become ardent advocates of the treatment as soon as they become convinced of its easiness, painlessness and efficiency. They greatly prefer medication that is administered by the physician at not too frequent intervals to one that involves the taking of pills or medicines several times each day. A busy man of affairs is very liable to forget his medication, especially when he feels well. A visit to the doctor's office every ten or fourteen days is a far smaller tax on the patient's memory and time. Besides this the treatment subserves the important consideration of secrecy. Many luetic cases very properly desire to conceal the fact of their affliction from their friends and relatives, and this is difficult to do when medicines must be taken several times a day for long periods of time. On the other hand, an occasional visit to the doctor for medication need excite no notice, and if it does it can be explained. And the treatment, once administered, leaves no trace behind. The loudest in their praises of the method are those who have experienced the inconveniences and the disagreeableness of the other medications.

Properly administered, the injections are almost painless. If the right site in the depths of the gluteal muscles is selected, the skin made thoroughly cold with ether, the puncture and the needle withdrawal made with rapidity, though the actual injection of the suspension be done slowly, the pain is an entirely negligible factor. The gluteal skin is not very sensitive, and my experience is that women stand the injections even better than men, possibly on account of the comparatively large size of these muscle masses in the female sex and the abundant fatty layer that covers them. The exceptions to this are few. Once in a long time one finds a male whose glutei are so small, and whose panniculus is so poorly developed, that it is difficult to get a tissue-mass suitable for the puncture. And exceptionally also one meets one of those neurotic and hyperesthetic individuals who faint on the incision of an acne pustule, and who will complain of suffering greatly from the injection. Both these classes, however, do not in my experience make up more than 1 or 2 per cent. of all the cases treated.

A certain amount of discomfort is felt in the glutei for twenty-four to forty-eight hours after the injection. Its amount varies greatly, of course, with individual susceptibility, but there is no real pain, the patient feeling as if he had received a bruise or kick. It wears off rapidly, and in three or four days there is usually no tenderness even on deep pressure on the spot. The great majority of patients do not mind it at all; many of them, in fact, make no spontaneous reference to it at their next visit.

It is, of course, of the greatest importance for the patient's comfort that the injection should be done properly, and a quick plunge of the needle through the chilled skin and into the depths of the muscle is essential. A hesitating, slow or boring insertion is bound to be painful. Still more important is the selection of a proper site for the operation. It is not wonderful that a patient that I saw a few days ago complained that the injections that his physician had given him had been very painful and had confined him to the house. They had all been made exactly over the great trochanters on each side, in a place where there was hardly any muscle at all, where the foreign mass was inevitably deposited under dense and resistant fascial structures, and where the slightest motion of the thigh disturbed the injured tissues.

Indurations after the injections do not occur, as a rule. They do no harm, and only betoken a slow rate of absorption of the injected material with a rather excessive reaction of the tissues; they are indications, other things being equal, for diminishing the frequency or the amount of the injections. I sometimes prefer on this account to give a 5 or 6-drop injection weekly, rather than one of double the size at fortnightly intervals. Abscesses are, of course, due to faulty technic, and I have found them, even in the hospital and dispensary work done by internes and assistants, very rarely, indeed. I have had the only one in years in my private work this winter, and in this case circumstances compelled me to make a hurried injection and the patient was very uncleanly.

A word as to the danger of embolism of the lungs after the injections. I believe it to be almost illusory.

I have never seen it occur, and in the cases that have been recorded the symptoms have been fugacious and recovery has been rapid. It is difficult to see how it can possibly occur if the precaution that I invariably employ and insist on, of disconnecting the syringe after the needle is introduced into the tissues and watching the lumen for a few seconds before making the injection, is carried out. There is evidence of entrance of the point of the needle into a vein in perhaps one out of twenty-five punctures. This merely entails the withdrawal of the needle and its reinsertion in another spot. The traversing of veins, as shown by the oozing of blood from the puncture after the needle is withdrawn, is of no moment at all and requires only a little pressure to stop it. I have recently had the unique experience of entering a vein in two successive punctures and having to make a third one; luckily it occurred in the person of a physician and required but little explanation.

The possibility of mercurial poisoning is of greater practical importance. Theoretically the deposition of a considerable amount of mercury in the tissues where a minor surgical operation would be required to remove it would seem to be a procedure that might, in some cases, have unpleasant consequences. A special idiosyncrasy to the poisonous effects of mercury does occur, and intoxication may happen as it does from the ingested and inuncted drug. As a matter of fact, however, the drug injected into the muscles seems very much less prone to cause the salivary, gastrointestinal and nervous symptoms of mercurial saturation than when given in other ways. Once in a while I see very mild symptoms of the kind, which subside under the ordinary measures and do not call for any special measures. On the other hand, I have several times given as much as 20 drops of the suspension, or 2 grains of the salicylate of mercury weekly, with rapid absorption and only beneficial effects. In a very few cases I have seen severer intoxication arise. These, however, have either been cases in which the severity and danger of the local lesions have been such as to necessitate and justify most intensive medication, whatever the mode of administration, as when a gumma of the palate has been on the point of breaking through and causing a perforation, or they have occurred in hospital cases in which the injections have been given with the usual routine recklessness of the average staff man. In no case have I found it necessary to cut down on the induration and remove the mass. In all cases, however, when I begin treatment, and the individual reaction of the patient to the drug is unknown, I begin with a small dose, only going up to a full one when I am convinced that it is safe to do so. The exceptions, of course, are the luetic emergencies; when there need be no hesitancy to take the slight risk of a possible intoxication to save the integrity of an important organ or prevent the extension of a specially destructive process.

I need say but little to this audience of the advantages of the injection method of treatment from the personal standpoint of the physician. To conduct the treatment yourself and to control it is certainly better than to leave it practically in the hands of the patient and his druggist. A certain proportion of patients, even in private practice, will neglect themselves after they have remained in apparent good health for a time, but their number is very much less when they receive a definite treatment at regular intervals from their medical attendant than when they are permitted to administer it themselves. The great majority of private patients remain under steady treatment for the prescribed three years. In public practice, of course, the conditions are different. The patients appear for treatment only, as a rule, when symptoms trouble them, and then they often ask for the injections that have done them good before.

144 West Forty-eighth Street.

DISCUSSION.

DR. ROBERT W. TAYLOR, New York City, said that he had always been unalterably opposed to the intramuscular injections of insoluble mercurial salts in the treatment of syphilis, for he regards the method as unscientific, mutilating, uncertain in effect and more or less dangerous to health and even life. He cited many cases from literature in support of his contention that the method is unsafe and unwise.

He said he had used the hypodermic injection of bichlorid of mercury and the bicyanid of mercury in water unremittingly since 1871 (The Treatment of Syphilis by the Hypodermic Injection of Corrosive Sublimate, *Medical Gazette*, May 13, 1871), and whereas at first he advocated it as a treatment of reserve utility and exigency, he now looks on it, in many cases, as highly valuable for routine and methodic treatment, and one of our best measures in general and chronic mercurialization. The idea that watery mercurial solutions pass very rapidly through the system and then leave the patient unmercurialized is a delusion. One or two injections will show chemical traces for a week or two, sometimes for much longer periods. After a course of injections, mercury may be found in the urine for several months.

Intramuscular injection of insoluble mercurials is a method utterly unscientific, mutilating, wholly unreliable as to therapeutic effect, and very often is a menace to limb and life. Absorption of these injections is absolutely a matter of haphazard: we have no control over them whatever. In some cases absorption may occur promptly and produce alarming symptoms, or the injections may become encysted and thus remain for months or years. They really act as foreign bodies. In one such instance, a blow on the buttocks after an injection made several years before produced such an explosion that embolism, stomatitis, general fever and emaciation promptly developed, and if the injected area had not been deeply incised, scraped and cauterized with white heat, the patient would have lost his life. The incompatibility of the tissues, subcutaneous or muscular, to insoluble mercurial salts and oily menstrua is well attested by the experience of many observers in thousands of cases; therefore, these injections should never be risked. We can get all necessary mercurial action without injury by means of soluble mercurial salts injected into the connective tissues. Why, then, should we be guilty of surgical vandalism? In all probability, hundreds of damage suits would have been instituted throughout the whole world for injuries inflicted by these intramuscular injections had it not been for the shamefacedness of patients in complaining, and acknowledging that they were victims suffering from syphilitic infection. (Verb. sap.)

DR. A. RAVOGLI, Cincinnati, said that he agrees with Dr. Gottheil in saying that to the genius of Scarenzio the world is indebted to a new era in the treatment of syphilis. The injection method has entirely changed the treatment of syphilis. In a great many cases, in spite of all the remedies by the mouth or by the skin or by fumigation, no benefit will result, while, after a few injections, there will be an entire change in the aspect of the disease, even in its most malignant form. Following the teaching of Prof. Manassei, he was among the first to try the injection of calomel in syphilis. The calomel was mixed with a little water and mucilage of gum acacia, and injected in quantities as high as ten grains, then gradually diminishing the dose. The injections of calomel were at times followed by unpleasant consequences, such as diffused abscesses and severe stomatitis; still, in severe cases of syphilis, where the vascular system or the eye, or some equally important organ is threatened, the disease will be seen to yield rapidly to this remedy. Subsequently, he used injections of a 1 per cent. solution of bichlorid of mercury. Good results were obtained from this method, better than from the cyanid peptonate or other mercury salts. He continued

this method of treatment for a number of years, but does not consider the action of the solution of mercury bichlorid as satisfactory as that of the insoluble salts and much more of the metallic mercury. Since he adopted the method of Lange, which is the use of gray oil by the injection method, he has obtained splendid results. When it is better known how the spirochætæ get inside the tissues there will, perhaps, be some explanation of why, with soluble solutions of mercury, we do not get the permanent action that we obtain from the gray oil. The mercury in those cases seems to act, not as a mercury salt, but probably as metallic mercury, and these metallic granules, reduced to their most minute size, probably affect the germs of syphilis and eradicate them. Dr. Ravogli said he is not a firm believer in the efficacy of the soluble salts.

In cases of tertiary syphilis with bone lesions he does not think that mercury exerts the powerful effect that it does during the earlier periods of the disease. In those cases he thinks we must depend on the iodin preparations much more than on mercury. In some of those cases the patients will not tolerate iodid of potassium or sodium by the mouth, and under those circumstances he gives iodipin, a preparation of iodin and sesame oil, one syringeful hypodermically every other day. He has found this method very efficacious in late bone lesions. If he wants to introduce mercury into the blood he resorts to intravenous injections, but he believes that mercury, properly used, should be introduced into the system through the lymphatics, and that there is the place to find the spirochætæ, and to neutralize the poison of syphilis.

DR. JOSEPH ZEISLER, Chicago, said that he has given thousands of injections in syphilis during the past twenty years and over, exclusively of the soluble salts of mercury; never of the insoluble ones. He had not the slightest doubt concerning the accuracy of the statements made and of the brilliant results of the treatment obtained by Drs. Gottheil, Klotz and others; but so far he has never been called on to resort to any more energetic method of treatment than that which he now employs. Enthusiastic statements, like those of Dr. Ravogli may perhaps lead to the impression abroad that we have in this method an unfailing weapon for the radical and permanent cure of syphilis. We should never lose sight of the fact that our treatment of syphilis is purely symptomatic, and he challenges any one to affirm that he can prevent relapses, whether by the injection-method or any other. If, by the use of the insoluble salts we could prevent relapses and do away with locomotor ataxia and other late evidences of syphilis, Dr. Zeisler said that he would be glad to adopt that method of treatment, but as the matter stands, he agrees entirely with Dr. Taylor, and he feels that one serious accident with this method could not be compensated for by all the good results obtained by it.

DR. GRANVILLE MACGOWAN, Los Angeles, Cal., said that he had seen most excellent results from the injection method of treatment in many cases where the administration of mercury by the mouth, although not contraindicated, was not practicable. Like Dr. Zeisler, he has been deterred from using the insoluble salts by a knowledge of what has happened to others. In patients who are able and willing to take care of themselves, syphilis is never, practically, a fatal disease. Outside of our great hospitals, with patients who are the victims of alcohol and drugs, and who are intensely anemic, it is rare to see the deformitive kinds of syphilis which were common twenty-five years ago. He has time and again seen people recover from syphilis, get well and do well, when the mercury was taken away from them, and he has also seen people take mercury to the limit without any resulting improvement. In those cases he has found, on making a blood count, that the patients were always excessively anemic, and the first thing to do is to take away the mercury and put them on good food, plenty of fresh air and baths, and the peptonate of iron with manganese. In dealing with a case of syphilis of a malignant type, or in certain emergencies, Dr. MacGowan sees no objection to the use of one of the insoluble preparations of mercury, and for that purpose he would certainly prefer the salicylate.

It makes some difference as to how the mercury is given; whether it is given alone, or in connection with the other drugs. He had in mind two patients, both physicians, who were unfortunate enough to acquire syphilis many years ago. The disease was apparently easily controlled at the time, but it has since recurred in the form of grave bone lesions. In one of them, about two-thirds of the medullary canal of one tibia has been obliterated. Both have taken large doses of potassium iodid, and both have received mercury by inunction. Dr. MacGowan wished to direct the discussion a little toward what would relieve or cure late syphilitic lesions of this kind. These two men are well worth saving to the profession, and if the injection treatment advocated by Dr. Gottheil and others will benefit them, he would be glad to know it. An assurance of that fact would be a personal kindness to him and his clients, as well as to many who depend on these men in their work.

DR. H. G. KLOTZ, New York City, said that he has used the injections of the insoluble preparations of mercury for 25 years, and he can confirm everything that Dr. Gottheil has said in regard to the superiority of this method of treatment over others. For a number of years before he tried the injections of the insoluble salts he used the soluble salts by the injection method, and he can positively say that the former are the more effective. He has seen them effective in cases of late syphilis of the viscera or brain where the bichlorid of mercury and similar salts had failed.

One of the advantages of the use of the insoluble salts is the almost entire absence of affections of the mouth following their use. Why that is so he can not say, as he uses scarcely any precautions to prevent them in his private practice. In fact, he has seen an ulcerative stomatitis heal under injections of the salicylate of mercury. Dr. Klotz said he can not understand why the use of the insoluble salts by injection should be termed an unscientific method. Is it more unscientific than the inunction method? He does not think so, nor does he regard it as dangerous as some of the speakers would have us believe. At the same time, he would not say that it is as free of disagreeable effects as Dr. Gottheil has said. Pain occasionally follows the injections to a moderate extent; it is remarkable that some patients invariably experience some pain on one side of the body, while injections made on the other side are absolutely painless.

He has seen syphilitic affections of the bones quickly cured by salicylate injections. He has seen a prominent tophus of the frontal bone disappear after two such injections. This method of treatment may not do good in all those cases, and we have still another old remedy to fall back on, and that is any good preparation of sarsaparilla, which does good sometimes, particularly in those who have taken much mercury. Under its use, he has seen cases yield that have resisted all kinds of inunctions and injections.

DR. L. E. SCHMIDT, Chicago, said that after ten years' experience with the injection method of treating syphilis, and after having had ample opportunity to use both soluble and insoluble remedies and the different methods of giving the same, he wished to state that he agrees with the views of Dr. Zeisler. He now practically restricts himself to the use of the soluble salts. For a number of years he made injections of gray oil, calomel and the salicylate of mercury, but he has come to the conclusion that there are dangers which no one can avoid in connection with the use of these insoluble salts. With the soluble salts these objectionable features are rarely met.

DR. M. B. HARTZELL, Philadelphia, said that from the general tenor of the discussion one might suppose that the treatment of syphilis by the use of mercury by the mouth had fallen into "innocuous desuetude," yet we all see a large number of cases of syphilis get well under the use of mercury by the mouth. He is of the opinion that the injection method should be limited to those cases in which for some reason, it is impossible for the patient to carry out the ordinary treatment, or in cases where there is extreme urgency, as, for example, when the disease attacks the central nervous system. He said that he is unalterably opposed to the injection of the insoluble salts. After such an injection, the drug is beyond control. It may be absorbed gradually, with good results, or it may be absorbed *en masse*,, with danger to the life and health of the patient. There are many cases where the in-

unction method can be employed to advantage, and in the vast majority of instances it accomplishes everything that mercury can acomplish in this disease. The drug we give is mercury, whether it is taken by the mouth, rubbed into the skin or injected. The injection method requires frequent visits to the physician's office, and in many instances the injections are extremely painful. He wished to emphasize the fact that the vast majority of the cases of syphilis can be cured by mercury taken either by the mouth or by inunction. He said that Jonathan Hutchinson years ago pointed out that potassium iodid is one of the rare drugs which in small doses is often as effective as in large ones. He has seen large tubercular syphilids disappear under one grain doses of potassium iodid, three times daily.

DR. JAY F. SCHAMBERG, Philadelphia, said that he is in complete accord with Dr. Hartzell. He fully agrees with what has been said regarding the value of the hypodermic treatment as a reserve measure. He has had a small experience with this method, having given about five or six hundred injections, but has limited himself to the use of the soluble mercurial salts. He believes that the number of cases of stomatitis produced by mercurial injections is considerably less than by mercury administered by the mouth. He never sterilizes the needle beyond immersing it in a 10 or 20 per cent. solution of carbolic acid in olive oil after each injection. A small cylindrical jar with a perforated aluminum plate is used for the purpose. He has not found it necessary to sterilize the needle further, and the injections have never produced anything beyond the ordinary inflammatory nodulation. By immersing the needle in oil, it remains untarnished, even though kept for months.

DR. JOHN A. FORDYCE, New York City, said that he is not an advocate of any routine method in the treatment of syphilis. He employs hypodermic medication, inunctions, and mercury by the mouth. In certain cases where the injection treatment has failed to prevent relapses, he has had success with the internal treatment. The objections to the use of the insoluble preparations by injection are generally the result of faulty technic, or are theoretic. He has the same hospital service as Dr. Gottheil, and has never seen an abscess produced by the injection of an insoluble preparation of mercury, nor has he seen any cases of severe ptyalism or any other serious symptoms, and he has come to regard the objections to that method as largely academic, and that the accidents that have been reported following these injections were due to a lack of proper precaution. The fact that we only employ these injections of insoluble salts every fifth, or seventh or tenth day is an argument in favor of their use in preference to the soluble preparations, which must be given every day, or every other day.

DR. WILLIAM H. DAVIS, Denver, said that the use of intramuscular injections should be limited to cases where we do not get the desired effect from internal medication. He has used both the soluble and insoluble preparations of mercury, and the injections are not entirely painless. When a rapid effect is desired, the intramuscular injections or inunctions or the old bath method are most efficacious. With internal medication we sometimes make the mistake of using one preparation too long. He believes there develops in most cases a systemic toleration to a single remedy. As a rule, he changes the preparation about once in thirty days, and thus gets along with a smaller dose.

DR. WILLIAM T. CORLETT, Cleveland, Ohio, said that in the treatment of syphilis the method easiest to administer and most agreeable to the patient is the best. He is not a firm advocate of any one method. In the majority of cases the administration of mercury by the mouth is best, because, as a rule, it is the easiest and most agreeable to the patient. The inunction method is a good one, but is open to objections. The injection of the soluble or insoluble salts of mercury is likewise good, but also has its disadvantages and should be resorted to in certain cases that will not respond well to other methods. He has no objection to the injection method, the main obstacle is the difficulty of getting patients to submit to it. In selected cases he has given the insoluble salts of mercury, especially the salicylate, for many years with excellent results, and in not a single instance has he seen an abscess follow. The injections are followed at times, however, by a certain amount of discomfort, amounting sometimes to pain for a few days.

DR. L. DUNCAN BULKLEY, New York City, said he has had to do with syphilis for thirty or forty years, and during the past ten years his first assistant at the New York Skin and Cancer Hospital has been an urgent advocate of the injection method. He has watched his assistant's cases, and has watched his own, and at the clinic there patients have been shown that were treated by both methods. From the result of his observation, he is not at all convinced of the desirability of the hypodermic use of mercury in syphilis, nor does he consider it preferable to the internal method, providing the drug is properly administered and given with the proper adjuvants, commonly iron. In the presence of syphilitic lesions, he almost always uses potassium iodid. At the hospital, injections have been used in many cases, both of the soluble and insoluble salts, and there have never been any abscesses or other untoward results. The preparation used there is the salicylate. He has never seen any amount of salivation or other unpleasant effects, but in spite of that he believes that he can handle a case of syphilis with satisfaction both to himself and the patient by limiting himself to the internal use of mercury and iodid of potassium. At the same time, he looks out for the general condition of the patient; not simply giving him mercury because he has syphilis, as is so often done, but regarding him as a human being who has syphilis and may also have other ailments. In spite of all he has seen and read, he is not inclined to adopt the hypodermic method of treating syphilis as a routine practice.

DR. W. S. GOTTHEIL, New York City, called attention to the fact that the bad effects of the treatment, of which Dr. Taylor cited instances, were in cases treated years ago, when aseptic precautions were not taken, and when accidents occurred in many similar operations.

DR. TAYLOR said that some of the cases he cited were reported as late as 1903 and 1904.

DR. W. S. GOTTHEIL said that accidents, of course, are liable to occur in some cases, no matter how the mercury is given. Deaths have occurred from the administration of mercury by the mouth in more than one case, and instances of intense salivation by that method are not infrequent. As to the ease with which the injections are given, with him they are a matter of daily routine. The method is not an experimental one; on the contrary, it is older than many of us here. If some of us say that the method is difficult, or that patients object to it, while others say that it is simple and that patients do not object to it, we are simply giving our own experience. It is especially in the obstinate tertiary and relapsing types of syphilis that the injection of the insoluble salts show their good results. He does not know of any other method by which we can prevent the rupture and extrusion of the contents of a gummatous osteitis or a gumma of the palate, and in reply to Dr. McGowan he assured him that if anything can heal these late bony lesions, it is this injection method of the insoluble preparations of mercury. Dr. Gottheil said that his paper dealt only with the administration of mercury. He has found injections of the soluble mercurials extremely effective, but his objection to them is that they are more painful than the insoluble, and that they must be repeated with great frequency—every day or every other day. Patients will not submit to this, and he does not blame them. One of the chief advantages of this method of treatment is that the injections are only necessary at lengthened intervals.

Bequests.—One of our citizens who just died willed more than $40,000 to provide that suffering children in St. Luke's Hospital may hear singing, while other small invalids outside may ride in Central Park. "University builders," says a writer, "have done less for the immediate gladdening of human hearts." This is true, and this is an uncommonly beautiful benefaction, but the universities, on foundations laid by the church, do the work of raising men who will intelligently build hospitals and lay out parks and think of such bequests as these.—*Christian Advocate* (N. Y.).

LIQUID AIR IN DERMATOLOGY; ITS INDICATIONS AND LIMITATIONS.*

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During the past year or more I have been particularly struck by the divergence of opinion expressed by my dermatologic confrères in New York respecting the value of liquid air in dermatology. In regard to its efficacy in some affections, there seems to be a general unanimity of opinion, while in others our opinions are strikingly at variance. This is the history of almost every new therapeutic agent, especially if it is a little out of the ordinary, and appears to be due, on the one hand, to a difference in the interpretation of its real powers and therapeutic properties and, on the other, to variations in the technic employed.

This is the position in which we find the *x*-ray to-day; there are few who understand it, hence the great difference in the effects produced and the results obtained. Sabouraud can use it in ringworm with a precision and uniform effect which no other can, apparently, approximate; it is possible that others can do better with it in other directions than he. While liquid air is simplicity itself compared to the intricate and complicated *x*-ray, may it not be possible that this divergence of opinion regarding even so simple a remedy is due to the fact that none of us really understands its powers and capabilities nor how to use it?

It is only by recording our personal experiences with a remedy and comparing the results obtained and technic employed that definite and uniform standards can be obtained in any field. It is for the furtherance of this object that I propose to bring to your attention this short study on liquid air, and the experiences I have had with it in both private and hospital practice, during the past four years. Appreciating fully that this short period of time is entirely inadequate to enable one to judge of its ultimate and radical effects, its immediate and moderately remote effects have been so definite, in some instances, that I feel firmly convinced that we have here a remedy of real worth, in a limited field, at least. With it results may be obtained in some conditions that can not be approximated by other means at our command, and in one instance at least it was the means of arresting a malignant process that was destined, in a few months, to destroy the life of the patient. An agent which can do this, if only in one instance, certainly warrants our most careful attention.

Unlike other means at our disposal, unfortunately, it is not always to be had when most needed, and unless it becomes more generally used for experimental or scientific purposes than it is at the present day it can never take a permanent place in our armamentarium. Commercially it has been proved an impossibility, and our future supply for medical purposes must come from technical and scientific schools and colleges, where it seems to be essential, at present, for the proper carrying out of certain lines of investigation.

We will first consider—though in the briefest manner possible, and only such as are essential to the matter in hand—the varied and peculiar general properties of this agent, together with the gross effects observed on the tissues, in the form of a drop, the spray, or by means of the cotton swab.

* Read in the Section on Cutaneous Medicine and Surgery of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

GENERAL PROPERTIES.

Physical.—Liquid air is a colorless, odorless, effervescing fluid, emitting a vapor which looks like steam, moderate when quiet, but abundant on agitation or stirring. It is very unstable and must be kept in a loosely-stoppered retainer to allow the escape of its component gases. It is of about the same weight as a given volume of water and has a temperature of 312 F. below zero. It feels dry to the touch and leaves no moisture on any surface with which it comes in contact.

Chemical.—Its component parts, chemically, are essentially nitrogen and oxygen, in the proportion, by weight, of about two and one-half parts of the former to one of the latter, together with a variable quantity of carbon dioxid; about one-eighth of 1 per cent. The nitrogen quickly bubbles away, leaving a liquid composed of almost pure oxygen, as demonstrated by its power to support combustion.

Therapeutic.—The effect of liquid air on bacteria was tested by Parks and White[1] in the Board of Health laboratories in New York some years ago both as regards the extreme cold alone, by incasing the germs in small tubes before immersion, and by placing them directly into the liquid air. Typhoid, anthrax and diphtheria bacilli were tested in tubes and were exposed from thirty to ninety minutes, and anthrax bacilli were immersed directly into the liquid air for over an hour. Pure cultures of all these were subsequently obtained from sterilized bouillon.

Huddleston[1] tested vaccine virus in the same manner and found, after fifteen minutes' exposure to the liquid, that its power to produce vaccination was not at all affected.

Parks[2] subsequently made further experiments in this same direction, exposing to liquid air almost every kind of germ life, from hay infusion to anthrax bacilli, in pure virulent cultures, for over two hours. It is reported that he found that liquid air killed 98 per cent. to 50 per cent. of these germs, from the weakest to the strongest. It killed 75 per cent. of typhoid germs, 50 per cent. of staphylococcus and 65 per cent. of diphtheria. He states that a two-hour exposure does not completely destroy the virulence of any pure culture of these germs, but suspends their vitality for a long time, and that "they are only brought back to activity by the most careful handling and under the most suitable conditions."

Macfayden,[3] in 1902, tested its effect on bacteria extending over a period of six months, using for the purpose *B. typhosus, B. coli communis* and *Staphylococcus pyogenes aureus;* in addition to these non-sporing forms he tested a saccharomyces. These were all immersed directly into liquid air and tested from time to time; he found absolutely no impairment of their vitality. The typhoid bacilli retained their pathogenic properties and responded to the agglutination test; the colon bacillus retained its normal properties; *Staphylococcus pyogenes aureus* produced pigment on solid and an active hemolysin in fluid media, while the yeast retained its fermentative powers.

These laboratory experiments, although the results are not exactly uniform, demonstrate pretty conclusively that liquid air is incapable of destroying germ life, and it is reasonable to suppose it is incapable of more than inhibiting the activity of pathogenic organisms in the living tissues.

1. White: Med. Record, lvi, 1899, 109.
2. White: The Journal A. M. A., xxxvi, 1901, 426.
3. A. Macfayden: (Proc. Royal Soc., Oct. 31, 1902) Abst. Med., News, Dec. 27, 1902, vol. lxxxi, p. 1215.

To explain the therapeutic properties of liquid air we must look, therefore, to changes in intracellular metabolism rather than to any bactericidal effect. Cell life is manifestly impossible in the prolonged presence of this agent, for the two chief essentials to living protoplasm, viz., heat and moisture, are here lacking. The sudden shock of its application contracts the blood vessels to the highest degree, but the normal temperature is soon resumed, although if frequently repeated a most powerful local stimulation is produced and ultimately endarteritis. The intense inflammatory reaction following its application causes a flooding of the lymph spaces with serous exudate, and to this is due its therapeutic effect in cutaneous cancer, some of whose disordered cells lie in these spaces in the periphery of the growth. By constantly inhibiting the activity of bacteria, in conditions known to be due to such invasion, their pathogenic power is nullified, for a time at least, thus allowing the inflammatory exudate to cope with them, the product eventually being carried off in the lymph stream.

It will thus be seen that liquid air is something more than a caustic, in the true sense of the word, for sloughing and sphacelation are not essential to the accomplishment of its therapeutic effects. I have seen this repeatedly exemplified in the treatment of vascular nevi and angiomata, and in new growths covered with a sound epidermis which was free from moisture.

GROSS EFFECTS ON HEALTHY AND DISEASED TISSUE.

With a full appreciation of the foregoing properties of this agent, it is easy to anticipate its gross and ultimate effects on healthy and diseased tissues, and its indications and limitations can be quite accurately defined. A drop on the sound skin causes a sensation of burning and tingling, and, if allowed to remain in contact a moment or two, will cause a blister. In the absence of moisture no slough nor death of tissue takes place, but on a perspiring skin contact immediately ensues, and a blister is quickly formed; on a denuded or moist surface, a slough with loss of tissue follows.

A mild and short exposure to the normal skin by means of the spray produces blanching, followed by a moderate congestion; a longer exposure thoroughly freezes and anesthetizes the part, but if not distally situated, as the ear, toe, finger, etc., the circulation is slowly restored without affecting its integrity. It is surprising to see how deeply and thoroughly a part may be frozen, either by the spray or by the cotton swab, without ultimately causing any injurious effects. It is a well-recognized fact that extreme degrees of temperature, either of heat or cold, produce deleterious effects on the human organism, in proportion directly to the amount of moisture accompanying them. This property of dryness, therefore, explains the difference in effect of liquid air on the tissues, and much lesser degrees of cold as exhibited, for instance, in frost-bite.

In applications with the swab, the resulting inflammatory swelling varies in degree according to the amount used, the pressure employed, and the location and character of the tissues. If these are firm and well nourished it is often very considerable, while if ill-nourished or in a senile condition, irrespective of the age of the subject, a large dose will cause little or no reaction. These observations are important in the practical use of the remedy, for it enables the physician to confidently tell the patient just what he is to expect. All are more or less mystified by this curious fluid and are often much concerned to know just what it is going to do.

The pain accompanying its application is very slight and rarely lasts long, but in some cases, especially when in proximity to the teeth, it will produce excruciating pain referred to the teeth, sometimes enduring for an hour. In pathologic conditions it relieves pain after a few applications and lessens discharge and odor; it likewise diminishes tendency to hemorrhage, although there is always a surface oozing during the congestive stage, when applied to an open surface. Mild applications will encourage healthy granulation, while stronger ones will destroy exuberant growth. It produces very little, if any, reactionary effect on scar tissue, and in consequence of this property I have found it of distinct diagnostic value in epithelioma, an observation which will be referred to more in detail later on.

ITS INDICATIONS AND LIMITATIONS.

From what has gone before it would naturally be supposed that liquid air is destined to have a very wide range of usefulness in the therapeutics of cutaneous disease. If it were not for the fact that we already have means at our disposal which are always accessible, that possess many of the properties of liquid air, and can fulfil its indications quite as well, or even better in many instances, this might be so. For local anesthesia, the treatment of abscess, bubo, boils, carbuncles, ulcers, warts and various other conditions in which extravagant claims were early made for this agent we have other far more convenient methods of equal or greater efficacy.

In pigmentary, hairy and vascular nevi, angiomata, lymphangioma circumscriptum, lupus erythematosus, lupus vulgaris and epitheliomata (unaccompanied by lymph-gland invasion), however, we have in liquid air a remedy which will often give us better results than we have been in the habit of getting by other means. I say often, rather than always, although the difference, I believe, rests wholly on the matter of technic.

TECHNIC.

Herein lies the kernel, as in almost every branch of practical medicine, but, unfortunately, perfection can not be attained. We can endeavor to approach it, however, and the nearer we do so the more uniform will be our results and, I believe, less divergent our individual opinions respecting the value of liquid air in dermatology.

For practical use liquid air is kept in what is called a "Dewar" bulb, which is a double bulb of glass, one blown inside the other, the space intervening being a vacuum. The surfaces of these bulbs are silvered, and this, together with the separating vacuum, retards the radiation of heat; the whole is incased in cotton wool or thick felt to prevent further radiation. These retainers are made in various sizes, but for office use one containing a liter is most convenient, and this amount, in ordinary room temperatures during the winter, will last six days. In summer it will not keep so long, unless it can be kept in an ice chest. A loose wad of absorbent cotton constitutes the cork.

The spray is obtained by inserting a rubber cork pierced by two glass tubes in the manner employed in the ordinary laboratory wash-bottle, the mouth of the entering tube being closed by the finger. I no longer use this method of applying the liquid, for it is difficult to accurately limit the area of exposure, and, furthermore, the field is constantly obscured by the dense and opaque spray, rendering it impossible to judge of the depth of its action.

The cotton swab is applicable to all conditions, and with a little experience can be used with great precision. Pine sticks of sufficient length to reach to the bottom of the retainer can be so shaped that the liquid may be applied in any quantity desired and to any shape or character of lesion. The end, which should be rather firmly wound with absorbent cotton, can thus be made flat, round, pointed or paddle-shape, as desired.

In making all applications the excess of liquid should be first shaken off, scabs should be completely removed from all lesions to be treated, and thin gauze must intervene between the applicator and all mucous or denuded surfaces, otherwise the swab will freeze fast.

The elements governing the effect produced are (1) the degree of saturation of the swab, (2) the accuracy of contact, (3) the amount of pressure exerted, and (4) the duration of the exposure.

On a thorough appreciation of these four elements, coupled with correct judgment respecting the interval allowed between exposures, which is a variable quantity according to the character of lesion and the effect of an antecedent treatment, depends wholly, I believe, our success or failure in treatment. The amount of pressure and its duration, granting the contact is accurate and saturation adequate, seems to be the keynote to the effect produced in any given application. This is the most difficult element to master and it is undoubtedly the most important. Of almost equal importance, however, is the correct judgment of the time to allow between applications; this may be only a few days or several weeks; if made too frequently disastrous results will follow. As a general rule, the slower the method the better the result.

In some conditions, as lupus erythematosus and port-wine mark, a light pressure with the paddle applicator, of relatively short duration to produce a superficial freezing, is indicated. A second application to the same area is not made until the effect of the first has subsided. In this manner both conditions, if not too extensive, can be successfully removed in a shorter time and with a better cosmetic effect than by our old methods. In pigmented and hairy nevi, angiomata, lymphangioma and lupus vulgaris a medium pressure is indicated, and the same rule applies of waiting until the effect of one application is passed before making another; in treating individual nodules in lupus vulgaris, however, rather severe pressure with the pointed applicator is required.

In epitheliomata firm pressure of considerable duration is essential. In those of the ordinary size that occur on various regions of the face the pressure should be exerted at the periphery rather than in the center, or recurrences may be expected; the same interval rule applies here also. Exactly the same indications obtain for the superficial type of rodent ulcer. It is in this connection that the diagnostic value of the agent previously referred to is apparent. Formerly in curetting what seemed to be small pearly nodules at the periphery of a healed patch one frequently found some of them to be firm cicatricial tissue. Firm pressure with the liquid air applicator, covering several such, freezes only the diseased nodules, no visible effect being observed on the others; I have found it a most valuable aid in this capacity.

In treating indolent eroding epitheliomata very firm pressure is required, particularly at the hard rolled edge, and in this type it generally requires several applications at intervals of two or three days before healing begins, but when once commenced the same rule of waiting before making further applications should be observed. In rapidly advancing fungating epithelioma the remedy should be used with a very bold hand until recrudescence begins, after which the interval applications should be adopted.

It is here that I have noted in more than one instance a very peculiar and misleading reactionary effect. In a day or two after an interval application a hard, raised, narrow, circinate and pearly border develops, resembling in every respect a typical active epithelioma. This entirely disappears in a few days and is undoubtedly a linear, hard blister formed at the periphery of an oversaturated swab. Were it not for the very sudden development of this condition one might be misled into making a second application, believing that the preceding one had only stimulated the growth; liquid air will do this, as in the case of ordinary caustics, if too mildly applied. In such an event an immediate severe application will usually arrest its progress at once, but in some cases it must be used in a most fearless manner in order to accomplish this effect.

The technic here detailed, based on and developed from an experience gained in the treatment of a fairly large number of cases, I put forth with a considerable degree of confidence, believing that by its careful observance uniform and satisfactory results may be obtained.

Some personal cases are here appended, a portion only of the total treated, but enough to illustrate the value of liquid air in a limited number of diseases and abnormalities. As nearly half of these were in private practice a good opportunity was offered of following most of them to the present time. Three only are at present under treatment, two hospital and one private case:

CASE 1.—*Nevus Pigmentosus.*—J. B., a private patient, a woman aged 50, with a raised, pigmented, non-hairy nevus, elliptical in shape, with dimensions of a half inch by three-eighths, situated on the back of the neck. Three applications with medium pressure successfully removed it, leaving a smooth, whitish cicatrix, scarcely discernible.

CASE 2.—*Nevus Pigmentosus.*—A. R., a girl aged 16, another private patient, with a semi-fleshy, elevated, dark-brown nevus, circular, three-eighths of an inch in diameter, and situated on the left chest below the clavicle. One application with moderate pressure almost entirely removed it; a second lighter application completed its removal, leaving only a small pale spot to mark its site.

CASE 3.—*Nevus Pigmentosus.*—H. B., a 14-year-old boy in hospital practice, with a raised, dark-brown nevus the size and shape of a "butter-bean," situated on the forehead a half inch above the outer end of the right eyebrow. As the tissues were dense and resistant, moderately severe pressure was used, which produced a well-marked inflammatory reaction. The lesion scabbed and healed satisfactorily, but required two subsequent milder applications to complete its removal; the resulting scar was not depressed, and was only slightly noticeable.

CASES 4 and 5.—*Nevus Pilosus et Pigmentosus.*—L. G. and P. M., two dispensary cases, one in a young man aged 17, an elongated hairy mole, three-quarters of an inch in length, situated above the beard line on the left cheek; the other, a mouse-skin lesion, not quite circular, but of about the area of a dime, on the right side of the chin, in a woman over forty. The first was removed in five applications with medium pressure, a slight amount of the pigmentation being left, which successfully masked the smooth cicatrix resulting. Three applications, the first two with moderate pressure, the third a very mild one, were successful in removing the lesion on the chin, leaving only a small non-depressed cicatrix.

CASE 6.—*Nevus Vasculosus.*—M. G. This was situated on

the nose of a woman, aged 40 years, a private patient, and was about the size and shape of a finger-nail. An application was made with sufficient pressure to produce a superficial caustic effect. This was done April 3, 1905, and on the 14th the thin scab that had formed had not fallen, but on the 25th, three weeks after the application, it had entirely disappeared; the scar was smooth and flat. She reported three months later, by request, and there had been no return; the result was apparently permanent.

CASE 7.—*Nevus Vasculosus.*—R. C. The lesion in this case was also situated on the nose, the subject being a dispensary patient, a little girl of 11 years. It was irregular in shape and occupied over twice the area of the preceding case, a so-called port-wine mark. The treatment was begun Jan. 16, 1905, with light pressure applications, and eight of these were made covering a period of about two months. The patch became lighter in color after each application, and in less than three months from the beginning of treatment, nothing remained of it. A very superficial atrophic-looking scar marked its site. No change had taken place seven weeks later, when she reported for observation.

CASE 8.—*Nevus Vasculosus.*—N. H., a young woman, aged 38, a private patient, with an irregularly shaped vascular nevus, situated partially over the angle of the left ramus and adjacent part of the neck. The upper part had been treated by electrolysis leaving a somewhat pitted scar; the remaining patch measured about one inch in its longest diameter. Applications with moderate pressure were begun July 24, 1904. The first was made next to the old scar, but proved to be of little too long duration, as a superficial slough formed. Five other applications were made over the remaining area, covering a period altogether of seven weeks. At the end of two and a half months, none of the nevus remained. The scar was smooth and superficial; the first part treated was slightly depressed, but was perfectly smooth. The patient was seen two years later and there had been no return; the cosmetic effect was satisfactory.

CASE 9.—*Lupus Erythematosus.*—C. S. This patient, a woman, 36 years of age, had been treated at the dispensary for over four months with very little improvement. The disease had lasted three years and consisted of two characteristic patches, one on the left cheek near the wing of the nose, about the size of thumb-nail, the other on the right side of the bridge, a little larger in area. Three applications with mild pressure removed the patch on the cheek, while five or six were required to remove the other completely; the patch on the nose was more deeply infiltrated, being the older of the two. The resulting scars were smooth and quite superficial. She was carefully instructed to return if further troubled. Over a year has elapsed but she has not again reported.

CASE 10.—*Lupus Erythematosus.*—T. K., a man, a hospital patient, 42 years of age, with a patch a little smaller than a twenty-five cent piece, situated on the left temple; duration one year and a half. Six application with moderate pressure were made from time to time in this case, and the patch had almost disappeared when the patient was lost sight of.

CASE 11.—*Lupus Vulgaris.*—M. F. This was a private patient, a girl of 13 years, with a patch nearly an inch in diameter, situated on the right side of the chin; it began as a small papule three years previously. A fairly severe freezing was done which caused considerable reaction. It sloughed and healed under a scab in about five weeks, but only about half of it had been destroyed. A moderately severe and two milder applications were subsequently made, resulting in its complete removal. The scar in this case was smooth and pliable, though slightly depressed. Over a year has now elapsed without any recurrence being reported.

CASE 12.—*Lupus Vulgaris.*—A. M. This is a very old case that I first saw at the hospital Feb. 18, 1895, in a woman then 53 years of age. She had a patch of lupus three inches in diameter on the right cheek, which was then of two and a half years' duration. I scarified it a number of times early in the course of its treatment, and it has been attacked in various ways since. On Jan. 23, 1906, there were five isolated tubercles remaining, the rest of the surface showing a surprisingly small amount of scarring. These were deeply frozen on that day with the pointed applicator; there was a great deal of inflammatory reaction, but they all disappeared. A week ago, sixteen months having elapsed, the patient thought one of the nodules was returning; it has become red and slightly raised, but it is not yet certain if it is diseased; if so, one application will undoubtedly cure it.

In the following series of fifteen cases of epithelioma, eight private and seven dispensary, there were twelve of that type commonly seen on the head and face. The other three were examples of the indolent eroding, superficial rodent ulcer, and quickly spreading fungating forms. They were all unaccompanied by lymph-gland metastases, the only type of cancer in which I consider this remedy is indicated:

CASE 1.—B. S., woman, aged 41, private patient. A scabbed quarter-inch size lesion, with pearly rolled edge, situated on the left side of the nose, between the bridge and the inner canthus. It began two years previously, from irritation by the nose-piece of her eye-glasses; there was the usual history of scabbing, healing and progression. One application was made with firm pressure Nov. 16, 1905. The crust fell off and it was healed in a little over two weeks. There has been no recurrence to the present time, over one and a half years; the scar is smooth and flat.

CASE 2.—M. M., woman, aged 28, private patient. A lesion of the same character and size as that in the preceding case, situated in the middle of the right side of the nose; it followed the squeezing of a black-head two years previously. Application was made Feb. 27, 1906, and it was entirely healed in three weeks. Thirteen months later, two pin-head size recurring nodules at the lower border of the scar were again frozen. All was healed in ten days, a good flat scar resulting. I attribute this recurrence to the fact that a small piece of the original scab was inadvertently left attached to the lower edge at the time the first application was made.

CASE 3.—C. C., woman, aged 26, private case. The lesion in this case was practically a duplicate of the two preceding ones, but was situated on the bridge of the nose, and followed a traumatism three years previously. One application made April 10, 1906, healed it completely in fourteen days, a good smooth scar resulting. No recurrence to date, a period of thirteen months.

CASES 4, 5, and 6.—L. H., M. P. and M. T. These were three hospital patients, women, aged respectively 24, 59 and 44 years, all with lesions located on the nose, varying in size from a quarter- to a half-inch in diameter. The first was between the left inner canthus and the nasal prominence, and was ten months in duration, developing from a blackhead. The second was two years in duration, located on the right nasal wing, and developed from a mole. The third followed irritation by eye-glasses five months previously, and was on the right side of the nose near the inner canthus. They required one, three and two applications respectively, and smooth superficial scars resulted in all of them. They have not been heard from since and are presumably well, as special efforts were made to impress them with the importance of reporting in the event of any change.

CASE 7.—H. S., man, aged 40, private patient. The lesion was situated beneath the outer canthus of the right eye, was 15 years in duration, and developed from a flat mole. It was nearly circular, three-quarters of an inch in diameter, was covered with a scab, and had a rolled, hard, pearly edge. Applications were begun Jan. 5, 1904, four treatments being necessary to destroy the growth. It was all healed March 12, 1904, two months later, and has remained well to the present time, over three years; he visited me recently for another trouble and a smooth superficial scar marked the site of the old lesion.

CASES 8 and 9.—M. F. and J. P. These were private patients, a man aged 65 and a woman aged 70, both with lesions about the size of a dime, situated on the right cheek, one near the eye, the other lower down. Both developed from flat senile warts, and were three and two years in duration respectively. One application made July 11, 1905, healed the first completely in about three weeks, and it remains well now, nearly two years later. The second required two treat-

ments, Jan. 6 and 29, 1906; it completely healed two weeks after the second application and has not returned, after a year and a half. Good smooth scars resulted in both instances.

CASE 10.—M. R., a man, aged 70, dispensary patient. Lesion behind the left ear, three-eighths of an inch in diameter, six months in duration, and was supposed to have followed the bite of an insect. One severe freezing, April 24, 1905, healed it entirely in less than three weeks. It is now over two years and no relapse has been reported. The scar was a trifle depressed, but smooth.

CASE 11.—H. C., a woman, aged 25, a hospital patient. Typical epithelioma, one-quarter by three-eighths of an inch in diameter, situated on the left breast, one inch above and to the inner side of the nipple; it developed from an injury by a safety-pin one year previously. This was frozen twice, Aug. 15 and Oct. 21, 1904, and was entirely healed in sixteen days after the last application; no recurrence to the present time, nearly three and a half years. The scar was very slight.

CASE 12.—F. S., woman, aged 60, a charity patient. The lesion is located in the center of the forehead and began in a mole last summer. When the first application was made March 26, 1907, it was three-quarters by one-half inch in size. There are still two or three small nodules on the right side of a smooth scar; the case is awaiting another treatment, which will undoubtedly finish it.

CASE 13.—C. M., a woman, aged 72, a private patient, with a rapidly growing fungating epithelioma starting just below the vermilion border of the lower lip, in the median line. It began as a pimple, which was pricked and squeezed, and when first seen, July 20, 1904, six weeks later, there was a round hard growth, a half inch in diameter and elevated the same distance above the surface, slightly ulcerated in the center, with telangiectic vessels coursing over it. This rested on a densely indurated base one inch in diameter, easily felt from inside the mouth. The protruding growth was removed July 25 with acid nitrate of mercury, and the base was exposed to the *x*-ray two or three times a week, at the hands of another, for four weeks. The patient returned to me August 29, with a fungating growth involving almost the whole width of the lip, and extending inside the mouth. On the same day I applied a large Marsden's paste to the growth below the vermilion line, and the following day another. In seven days the slough came away, leaving a deep excavation. On September 7 the mucous surface was attacked with liquid air, and up to October 22, a period of six weeks, nine severe applications had been made. On October 26 a group of nodules developed on the right side of the chin, at a distance from the original growth; two more applications were made to these and the remainder of the original growth, making eleven in all, the last one being on November 29. On December 20, three months from the first application, all was perfectly healed, with an excellent scar level with the surface. The lip was slightly shortened, but the contour was not affected. She returned on that day to her home in a distant city.

On Jan. 8, 1906, thirteen months from the last application, she returned with a relapsing nodule the size of a pea, on the mucous surface, to the right of the median line. Two applications were made to this, but they were too mild and stimulated it to three times its original size. On January 29 a very severe application was made, freezing the entire thickness of the lip; this was successful, for on March 5 she returned home again, clinically, perfectly well. Strange to say, the contour of the lip was still preserved. There has been no recurrence to the present day, a period of fifteen months, or seventeen since the last application, and the patient is in her 75th year, a fine specimen of physical health.

CASE 14.—D. R., a woman, aged 40, a dispensary patient, with an eroding, indolent, and very painful carcinoma of fifteen years' duration, involving the left side of the nose and adjacent cheek and upper lip. The ala and a portion of the tip have been destroyed, the ulceration extending half way up the side of the nose and to the median line. It has a hard everted border and is devoid of granulations. She received the *x*-ray three times a week for the past four years, with, the patient says, no beneficial effect. Liquid air has been applied four times between Feb. 3, 1907, and April 1, but inability to obtain the agent has delayed its further treatment. The pain, however, is very much less, and the upper one-third has healed. I have every confidence that liquid air will eventually heal it.

CASE 15.—S. B., a man, aged 57, a private patient, with a superficial rodent ulcer of about ten years' duration situated on the right temple and forehead. It was successfully healed by the *x*-ray, but did not remain so, although there is a smooth but thin scar on the temple, three inches in diameter, free from active disease. When first seen, Dec. 5, 1906, the disease was active over the right eyebrow, in the form of a crescentic deep ulceration an inch long, extending parallel to it, and almost exposing the periosteum. There was also an ulcer, three-quarters of an inch in diameter, over the zygoma, and a line of nodular lesions extending anteriorly from this, almost to the outer canthus. A third crescentic ulceration extended upward from this point, almost joining the one above the eyebrow. These have had, altogether, five applications from Dec. 13, 1906, to May 6, 1907, as a result of which all have healed except the ulcer over the zygoma, although this is half gone. The patient is still under treatment and I feel certain one more application will heal the small ulceration remaining. The result to date could have been accomplished in a third of the time had the agent been accessible when wanted and had the patient been more attentive.

It is hoped that the experiences here recorded have justified, in a measure at least, the conviction expressed at the beginning that we have in liquid air a remedy that is not without considerable value in a limited field in dermatology.

The results obtained in the first series of cases, including pigmented, hairy and vascular nevi, lupus erythematosus and lupus vulgaris are certainly better than we have been accustomed to get by our old methods in the same character of lesion. By this method such conditions can be removed with much greater ease and with very little inconvenience to the patient, while with proper care a minimum amount of scarring is produced.

In epithelioma, in the particular class referred to, it must be conceded, I think, that it is distinctly a power for good. It will take time and further experience to determine just all that it is capable of in this direction, but even now, it seems to me, it outranks some of the remedies on which we have placed great reliance. It is generally admitted that excision is not so effective in cutaneous epithelioma as the caustic, or the curette and caustic, for the flooding of the surrounding lymph spaces reaches the outlying cells which the knife can not. It has been shown that liquid air can do more than an ordinary caustic; logically, then, it should take a high place among them.

The *x*-ray will sometimes heal them, but they are prone to recur, and on a recurrence it is often ineffective. With better technic recurrences after liquid air will be, I believe, less likely, but on these it is as effective as on the primary growth. The cosmetic effect is equally good in both, but it is to be noted that no danger attaches to the use of liquid air either to the operator or to the subject. Finally the matter of time and trouble to the patient should be a consideration, and in treatment by liquid air these are greatly minimized.

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DISCUSSION.

DR. H. W. STELWAGON, Philadelphia, said that he had the pleasure, a few years ago, of seeing Dr. Charles T. Dade demonstrate this method in New York, especially in cases of angioma and lupus erythematosus, in both of which affections there is need of new methods of treatment. In the treatment of angiomata, electrolysis has not proved very serviceable; it very often fails, repeated operations are often necessary, and the treatment is very painful. The usual

methods of treatment in lupus erythematosus are also unsatisfactory, although in some cases the results are fairly good. Those cases in which we do get results are the ones where the disease has remained stationary, has shown no inclination to spread, and in which one is justified in using superficially destructive applications. In the cases of angioma and lupus erythematosus treated with liquid air, there was very little scarring, which, he said, is also a strong argument in favor of this method of treatment.

DR. WILLIAM A. PUSEY, Chicago, stated that the effect of liquid air depends on the fact that it produces almost instantaneous freezing. The objections to it are that it is commercially unobtainable, and is difficult to preserve. After witnessing the demonstration nearly two years ago by Dr. Dade, it occurred to Dr. Pusey that a good substitute for liquid air would be liquid carbon dioxid, which is obtainable anywhere. On investigation, he discovered that the commercial liquid carbon dioxid is liquified under a pressure of about 800 pounds, so that it is not in liquid form at atmospheric pressure, and that when it is withdrawn from a drum it evaporates so rapidly that it freezes into a snow very much in appearance like ordinary snow. Liquid air has a temperature of about —180 degrees C., while solid carbon dioxid has a temperature of about —90 degrees C. Liquid air, therefore, is twice as cold, but both will produce almost instantaneous freezing, and Dr. Pusey was not sure that the temperature of carbon dioxid snow is not better for therapeutic purposes than that of liquid air. In his opinion the usefulness of both of these agents depends on the fact that they are destructive agents whose actions are readily controllable. One can produce an inflammatory reaction which will result in sclerosis, or one can produce destruction of the tissues with them; the effect produced depending on the duration of the application and, to a less degree, on the amount of pressure exerted. Dr. Pusey said that he gained the impression at first that one could produce sloughing with liquid air, but he has since learned that either with liquid air or liquid carbon dioxid one can destroy tissue as completely as with a hot poker. By timing the application of liquid carbon dioxid he has found that the effects can be controlled. With ten seconds there is a moderate reaction, with twenty seconds a fairly severe reaction with blister formation, and so on through longer exposures.

Dr. Pusey has used carbon dioxid in many cases of nevi, to a less extent in lupus erythematosus. In small pigmented nevi, his results have been the same as those of Dr. Whitehouse; the nevi have been removed without difficulty, leaving white pliable scars. He has also used it in one case of a very extensive hairy nevus, involving the face and forehead, in a girl 12 years old. In this case the nevus was covered with long hair, which was first removed by the Roentgen rays; then he began to work on the pigmented area with the carbon dioxid, and he has succeeded, practically, in removing the pigment. The case was demonstrated at a meeting of the Chicago Medical Society and the members present agreed that an equally good result could not be obtained by other means. In cases of vascular nevi the results are also good, but the application must be made with great care, because if the freezing process is overdone, it will result in a perfectly white ivory-like scar. In regard to lupus erythematosus, he demonstrated a case recently in which he obtained good symptomatic results. The lesions involved part of the face and forehead, and the treatment resulted in perfectly white, smooth, flexible scars; in fact, hardly scars at all. At one point there still remains a small area of suspicious tissue. Of course, nothing more is claimed than a symptomatic result, for, as is known, lupus erythematosus is an extremely capricious disease.

Dr. Pusey has not tried the method in the treatment of epitheliomata, except the very superficial lesions accompanying senile keratoses. Senile keratoses, and the beginning epitheliomatous infiltrations which occur with them, can readily be removed by liquid CO_2 much more readily than by other methods. Any amount of tissue can be destroyed with liquid air or with liquid carbon dioxid, so that epitheliomata can be treated successfully with these agents, but Dr. Pusey does not believe it is the method of choice.

He has applied liquid air on a few nodules of lupus vulgaris, but not with success, undoubtedly, however, because his applications were not vigorous enough. In short, his experience with carbon dioxid snow corresponds exactly with that of Dr. Whitehouse with liquid air. If there is any difference in the results, he is unable to determine them from his description. Dr. Pusey believes the use of both the agents is distinctly worthy of trial.

DR. GEORGE T. JACKSON, New York City, has had a large experience with liquid air at the Vanderbilt Clinic, where Dr. Dade is one of the physicians, and he confirmed the efficacy of this agent, although it is often very painful. He has seen men and women cry with pain during the thawing out of the frozen surface. As regards the methods of applying the liquid air, he has found the swab the most satisfactory, using a sufficient amount of cotton to absorb the liquid. By the applications the tissues are first frozen stiff; then they thaw out and a blister forms which dries up and falls off, leaving a perfectly smooth scar. Liquid air is a destructive agent and will always leave a scar.

In lupus vulgaris he has not had much success with it, but in lupus erythematosus, he thinks it is the best thing we have, in spite of the scar that it leaves. But the disease always leaves scars. In all forms of nevus the result of the treatment has been excellent. In deep-seated angiomata it takes out the color, but does not remove the tumor. In port-wine marks the results have been less satisfactory, on account of the depth of those lesions. In epithelioma he has had practically the same results as those reported by Dr. Whitehouse.

DR. L. DUNCAN BULKLEY, New York City, has had considerable experience with liquid air. In some of the cases, the scars that were left could, he thought, have been rendered less noticeable with a better knowledge of the technic of the applications, especially in lupus erythematosus. He did not understand how Dr. Whitehouse could refer so lightly to the pain caused by these applications. He has known patients to complain bitterly of the pain after severe applications. With repeated and light applications, however, given at distant intervals, as Dr. Whitehouse recommends, one can readily understand that the pain would be comparatively slight.

DR. JAMES D. GOLD, Bridgeport, Conn., has used liquid air to some extent in private practice. In one case of large vascular nevus in the temporal region and involving half of the eyebrow and both upper and lower lids, he made repeated applications, with very satisfactory results. The treatment has left a smooth white scar in the area where there was originally a large, bright red nevus. The patient in this case was a baby, and the treatments were commenced when it was 4 months old. The pain caused by the applications apparently was severe, as the child cried for two or three hours afterward. In cases of lupus erythematosus, his results have also been satisfactory. In one case an excellent result was obtained after two applications. That patient also complained of pain. In another case of lupus erythematosus where the disease was of seven years' standing, the applications failed to arrest the spreading of the lesions.

DR. LEE S. SHONINGER, New York City, stated that one point in connection with this treatment is not entirely clear, and that is the question of scarring. Dr. Whitehouse had a resultant scar in almost every case. It would be of some importance, he thought, if Dr. Whitehouse would dilate on the character of that scar; whether it was atrophic or hypertrophic; the pathologic process involved in the formation of the scar, and also the macroscopic changes taking place in the interval.

DR. WILLIAM S. GOTTHEIL, New York City, stated that liquid air is a curiosity; we can not get it. Carbon dioxid, on the other hand, is obtainable, and, according to Dr. Pusey, it practically answers the same purpose as liquid air. Apparently these applications act by setting up an inflammatory reaction, and they cause scarring. Can not the same thing be done with any cauterizing agent? For instance, with trichloracetic acid, a very manageable caustic, one can produce

an inflammation, with resulting superficial cicatricial tissue, just as with carbon dioxid.

DR. H. H. WHITEHOUSE, New York City, said he had simply referred to the manner in which the applications should be made if deep scarring is to be avoided. The ordinary scars left by the applications are perfectly smooth and pliable, and he has never seen hypertrophic scars result from its use. What the pathology of the process is, and what the changes are that take place during the intervals of the freezing, he does not know, as most of these lesions are on the face, and it would be difficult to get a section of tissue for examination. As to carbon dioxid, which has about one-half the coldness of liquid air, he thought that one ought to get from it about the results that we get from liquid air. In regard to the pain caused by the application; he stated that while he may have been misled in that respect by some of his patients, he does not think his observations, in the main, were far wrong. After treatment, he has always instructed patients to make cold applications, which apparently were soothing. The better nourished and the younger the patient, the greater the degree of reaction and the greater the pain. In some cases of rodent ulcer the patients scarcely felt the applications, and in none of the cases was pain a prominent symptom. In any event, it could readily be alleviated by the application of an icebag. The interval between the applications, to which Dr. Bulkley referred, is a very important factor in the treatment.

Generally speaking, it takes about a week or ten days, after a mild application, for the little scabs to fall off and the tissues to resume their normal condition. After severe applications, to an epithelioma, for instance, often four to six weeks will elapse before the good effect of an application ceases. In indolent, deeply eroding epitheliomas, several applications, at intervals of a day or two, are necessary to start the healing process, after which three to six weeks will often elapse before another application is needed.

As regards the treatment of deep-seated port-wine marks, his opinions are practically the same as those expressed by Dr. Jackson. In these cases such a deep-seated effect must be obtained that the resulting scar may be worse than the original lesion. The same is true of deep-seated lupus erythematosus, the type generally observed in long-standing cases.

THE VALUE OF TUBERCULIN TR AS A DIAGNOSTIC AND THERAPEUTIC AGENT

IN THE RECOGNITION AND TREATMENT OF TUBERCULOSIS OF THE EYE; WITH REPORT OF CASES.*

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Tuberculosis of the eye and its adnexa is a rather rare disease, though I believe not so uncommon as reported, for its presence is sometimes not recognized from lack of observation. We know that all parts of the eye may suffer secondarily from extension of the disease from lesions elsewhere in the body, yet it is a well-recognized fact that the ocular lesion may be primary, and the only existing focus of infection in the organism. It seems to be a well-established fact that tuberculosis attacks by preference the posterior segment of the eyeball, especially the more highly vascularized portion, like the chorioid, extending to the retina and thence by the blood vessels to the anterior segment of the eye. When the disease spreads from the interior to the exterior, the foci of disease may always be found at the filtration angle. The presence of indurated glands in anterior tuberculosis of the eye is not pathognomonic, but is of great diagnostic value, for statistics show that enlarged glands are found in about 85 per cent. of these cases. The microscopic examination of these glands does not necessarily render the diagnosis of tuberculosis certain, even if numerous giant cells are found, and the bacteriologic examination must prove the presence of the tubercle bacillus.

DETERMINATION OF NATURE OF LESION.

To determine positively the tuberculous nature of an ocular lesion, we must apply three tests, viz.: 1, histologic; 2, experimental; 3, bacteriologic.

Histologic Test.—The respective value of these tests is well described by E. Treacher Collins,[1] who states that the reaction of the tissues to the tubercle bacillus consists of an aggregation of cells made up of a central giant cell, the so-called Langhans' cell, epithelioid cells, and marginal lymphocytes. These cell aggregations may undergo caseous degeneration or a general cicatricial fibrosis. These three conditions, the cellular aggregation, the giant-cell system and the caseous degeneration, found together in a tissue, make the diagnosis of tuberculosis practically certain; but the presence of any one of them alone is not sufficient proof.

The Experimental Test.—This consists in the inoculation of tuberculous tissue in the eyes of rabbits or guinea-pigs, and the most suitable situation is the anterior chamber. The tissue to be inoculated may be taken from any part of the organ, but must be entirely free from any suppurative organisms. The results of these inoculations of tuberculous material into the anterior chamber have been so generally successful that we have come to look on the experimental test as the most certain of all. The immediate reaction after such an inoculation is very slight. By the end of a week the piece of tissue has been absorbed, and the eye looks normal. After a period varying from ten to twenty days the iris becomes inflamed and shows small gray nodules scattered all over the surface, which grow larger, coalesce and sometimes fill the anterior chamber and invade the cornea. General infection of the animal soon follows.

The Bacteriologic Test.—The presence of the tubercle bacillus in the tissue is conclusive proof of its tuberculous nature, but failure to find the bacillus after the most careful search can not be regarded as disproving the tuberculous nature of a lesion. In some cases the bacilli are limited in number, notably in chronic cases.

MODE OF ENTRY OF BACILLUS IN EYE LESIONS.

The postmortem table has often taught us that many tuberculous lesions exist without giving any clinical evidence of their presence. We know that endogenous infection of the posterior segment of the eye occurs in acute dissemination tuberculosis, and also in connection with the chronic tuberculosis of the skin, bones and joints. But we occasionally see cases of tuberculosis of the eye, both intraocular and extraocular, without the slightest evidence of the disease in any other part of the organism at the time, though they may have developed later.

We are inclined to believe that, except through some perforating wound or loss of substance, the only other port of entry for the tubercle bacilli would be the lymphatic or blood circulation. But we have no positive evidence that the bacilli can enter the blood current, except by direct inoculation or the involvement of the blood vessel in a nodule of the disease. Hence the development of tuberculosis of the eye through the blood is always secondary to a tuberculous focus elsewhere.

We know that tubercle bacilli may pass through the

*Read in the Section on Ophthalmology of the American Medical Association at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Ophthalmoscope, January, 1907.

mucous membrane of the bronchial tubes or of the intestinal tract and be absorbed by the lymphatics into the glands where they are arrested and infect these glands.

In ocular tuberculosis there is frequently a history of tuberculosis in the family, and it is significant that the intraocular form of the disease is most common in children. It is probably certain that in all the intraocular tuberculous lesions the eye becomes infected by the blood current, and the bacilli would be most likely to be arrested and set up foci of disease at points where the finest vessels exist or at bifurcations of minute capillaries.

REAL NATURE OF TUBERCULOUS PROCESS.

The real nature of the tuberculous process in the body is still somewhat of a *terra incognita*. It seems probable that the tuberculous infection gives rise to multiple forms of intoxication, of which we as yet know little. The renewal of these various toxic processes occurs so constantly that our present means of investigation are insufficient to enable us to understand them, and for this reason the problem of tuberculous experimentation becomes very complicated. The tuberculous lesions develop slowly, especially in the posterior segment of the eye, whether the toxic product acts from a distance through the blood or from the presence of bacilli at the site of the lesion.

TUBERCULIN TREATMENT.

The tuberculin TR supplied by Merck is produced by triturating the dried cultures of the tubercle bacillus, digesting the resulting powder with distilled water and then rapidly rotating the solution by centrifugal force. After the centrifugal rotation has been carried on sufficiently long, the upper clear layer is poured off and the remainder further treated as before until complete solution is obtained. Then 20 per cent. glycerin is added. The solution then contains 0.1 c.cm. of solid matter in one centimeter.

The injections should be made, as a rule, every second day, beginning with a dose of 0.002 mg., and this dose should be gradually increased, but avoiding as far as possible febrile attacks.

There seems to be now no reasonable doubt that in tuberculin we have a valuable diagnostic agent. The diagnosis of tuberculous disease of the eye may be regarded as established in a given case, if the following conditions are noted: First, the undoubted constitutional reaction as shown in the typical sudden rise and fall of temperature, amounting to 2 or 2.5 degrees, accompanied by a chilly feeling and some pain in the joints; second, by repeated local reaction in the eyes, when the dose of tuberculin injected has reached the physiologic limit, as shown by marked increase in the ciliary injection and in the swelling and vascularity of the tuberculous nodules in the parts involved; third, if there be a hitherto unsuspected focus of disease in the bronchi or lungs, there will be a regular afternoon rise of temperature and a slight cough.

It is wise to begin with the smallest possible dose, in view of a possible profound general reaction. A failure to obtain a general and local reaction after one injection is not at all conclusive, but it should be thoroughly understood in advance that the diagnosis of the real tuberculous nature of a lesion can only be made when the rise in temperature is accompanied by distinct local reaction in the eye; but it can not be claimed that even this is positively conclusive.

The manner in which the injection of tuberculin TR proves of benefit or effects a cure is still somewhat obscure. It might seem from certain clinical observations that tuberculin does not directly cure, but merely retards, or arrests, or improves the tuberculous lesion. The production of antituberculin in the body can not be very great, for small amounts of tuberculin injected after weeks or even months in a given case will induce the typical reaction. Hence the immunity induced by an injection of tuberculin is merely relative, limited both quantitatively and as to time. The tuberculin seems sometimes actually to cause the diseased process to assume an acute course, and thus render the healing possible. It is rare that any beneficial effect from the injection of tuberculin is noticed before the lapse of two or three weeks from the first injection.

Before beginning the treatment it is well to begin taking the temperature of the patient three or four days before the first injection. Beginning with a dose of 0.002 mg., the strength of the injection may be gradually increased to 0.5 c.cg.

In summarizing the reports of the numerous authors which have been published during the last five years, it would appear that even by the most enthusiastic advocates of this method of treatment much less can be claimed for the value of tuberculin as a therapeutic agent than for its value as an aid to diagnosis, especially in cases of intraocular tuberculosis of the posterior segment of the eye. Tuberculosis of the chorioid and retina is apt to be of a chronic, non-virulent type and with a more or less pronounced tendency to spontaneous healing. These cases can undoubtedly be helped by tuberculin, though the disease may not be cured. Experiments with animal inoculation would seem to prove that the relatively favorable course of this chorioidal tuberculosis is due to the infection having been transmitted through the blood vessels, while the introduction into the eye of tuberculous material from without always causes a virulent inflammation.

My own cases here reported were all from my private practice and were all cases involving the lids or the conjunctiva, cornea and iris. I have not used tuberculin injection in any case of tuberculosis of the chorioid or retina. Of the ten cases reported, four were tuberculosis of the eyelid, one or both; three were cases of tuberculosis of the conjunctiva, which involved the episcleral tissue and the sclera secondarily; one was tuberculosis of the cornea, and two were tuberculosis of the iris. In both the latter cases the cornea and ciliary body were involved. In the observation and continued treatment of these cases I have come to the same conclusions as von Hippel.[2] It is all important to continue the injections for a somewhat lengthy period, several months, in order to prevent the occurrence of relapses. They must be continued until all nodules have been replaced by cicatricial tissue, all ulcerations are healed, until the swelling and vascularity of the iris have disappeared, and until all deposits on the posterior surface of the cornea and all opacities in the vitreous have been absorbed. In some cases the treatment, with occasional interruptions, must last five or six months.

By this treatment the tubercle bacilli are not killed, but the tuberculin TR excites a reactive inflammation in the surrounding tissue, in which scar tissue is formed. This should be the object of the treatment and is best obtained, as von Hippel states, by the use of small, gradually increasing doses of TR, which cause no apparent

2. Archiv. f. Ophth., lix, 1.

increase in the inflammatory symptoms. Relapses are frequent, but become less likely to occur if the treatment is carried out for months. I am not prepared to accept the very optimistic dictum of von Hippel, that "this remedy, properly handled and employed for months, will cure the severest cases of ocular tuberculosis with maintenance of vision." But I believe that it is a remedy of considerable value, and that in small doses, properly employed, it will not act unfavorably on the general health. By this method, in the course of two or three weeks, the ciliary injection diminishes, the deep corneal opacities begin to clear up, the nodules in the iris grow smaller and less vascular. In the course of the second or third month the ciliary injection disappears, the cornea becomes transparent or nearly so, the nodules disappear from the lids, the sclera or the iris, and a gray cicatricial tissue takes their place. The vitreous opacities last much longer, and may never entirely disappear.

CASE 1.—Tuberculosis of left upper lid, including the conjunctival surface.

Patient.—A young woman, aged 29, was first seen in October, 1900, and gave the following history: About three months previously a small nodule appeared on the edge of the left upper lid in the outer-third. It resembled a stye and at first gave no trouble. It soon began to spread in both directions, but was not ulcerated. The patient was apparently in good health, but gave a history of some obstinate intestinal trouble three years before. Two cases of pulmonary tuberculosis in the family, a sister and a maternal uncle, with fatal termination.

Examination.—When I saw her, the lesion involved the outer two-thirds of the lid, and extended well toward the upper margin of the tarsus. The margin of the lid was ulcerated and the ulceration extended upward on the inner surface of the lid for about 4 mm. The ocular conjunctiva and cornea were normal. The surface of the ulceration was pale and granular. The pre-auricular gland was swollen, and so were three of the upper cervical glands. Interior of the eye was normal, and vision was unaffected. The clinical picture was one of tarsitis.

Treatment and Result.—The ulcerated surface was curetted and the fragments removed showed under the microscope giant cells and lymphocytes, but no bacilli. The first injection of the minimum dose of T.R. gave the typical general reaction, but it was not until the third injection that any local reaction occurred in the eye and then it was decided by considerable swelling of the lid, injection of the conjunctival vessels, and increased secretion from ulcerated surface, and more marked swelling of pre-auricular gland. This patient received injections on alternate days for three weeks, and afterward two injections weekly for two months longer, and then one injection weekly for two months and a half. The dose was gradually increased from 2 mg. to 0.5 cg., which was the largest dose given. In all, the patient received forty-one injections, and the treatment extended over a period of five and a half months. There was no demonstrable effect until after the ninth injection, when the ulcerated surface began to clear up and the whole tarsus became softer. These changes continued until the lid could be everted easily and the ulcerated surface began to heal. At the end of the third month the edge of the lid and the conjunctival surface showed a smooth cicatricial appearance, and the lid had regained its normal thickness and appearance, except for a small node at the external canthus. About the middle of the fourth month the appearance was normal and swollen glands had disappeared. There has been no return of the disease.

CASE 2.—Tuberculosis of cornea and conjunctiva.

Patient.—A girl, aged 15, first seen in December, 1902, gave a clear tuberculous history on the paternal side for three generations. One brother died in infancy with some intestinal trouble.

History.—The patient had always been frail and anemic, but had no pulmonary or intestinal symptoms. One year before I saw her the right eye became inflamed and she was told that the eye was ulcerated. After some months the inflammation subsided, but one month ago there was a relapse.

Examination.—When I saw her there was a dense, deep infiltration of the cornea in the inferior segment, occupying about one-third of the corneal diameter, and in the ocular conjunctiva were a number of small nodules. In the cornea were three small grayish-yellow foci, and there were a number of new-formed vessels running from the periphery toward the foci. The iris and pupil seemed normal, but the ciliary injection was marked. The pre-auricular gland was enlarged and sensitive to the touch, but there were no enlarged cervical glands. A careful examination of the lungs revealed no evidence of tuberculosis, and the gastrointestinal tract seemed normal as to its functions.

Treatment and Result.—The first injection of the minimum dose of tuberculin TR gave a pronounced typical reaction in the rise and fall of temperature, but no local reaction. The second injection, two days later, was followed within three hours by very decided reaction in the eye, the ciliary injection and all the clinical symptoms being made much worse, and this local reaction continued for more than a week. This patient received two injections a week for twenty successive weeks, and subsequently one injection weekly for five weeks longer, the total number of injections being forty-five, and the dose was gradually increased to the maximum of half a centigram. Improvement began after the fifth week, the ciliary injection becoming less marked, the miliary nodules in the adjacent conjunctiva becoming flatter, and the vessels in the cornea fading out. After the tenth injection the pre-auricular gland began to soften and in the course of two weeks the enlargement disappeared. After the fourth month all the ocular symptoms had subsided, except a small, somewhat dense opacity of the cornea near the lower margin, and this still remained when I last saw the patient, three years after the treatment was stopped.

CASE 3.—Tuberculosis of conjunctiva and sclera.

Patient.—A girl, aged 15, was first seen in March, 1903. There was no tuberculosis in the immediate family, but there had been in preceding generations.

History.—She had had ophthalmia neonatorum, but recovered with transparent corneæ. At the age of 12 I had fitted her with compound astigmatic glasses, on account of eyeache and headache. In January, 1903, she had a severe and prolonged attack of what appeared to be catarrhal conjunctivitis, but I did not see her, as she was at boarding school. From this the right eye recovered eventually, but the left eye showed a swelling on the temporal side of the eyeball, for which she was brought to me.

Examination.—I found an irregular fan-shaped thickening of the conjunctiva on the temporal aspect of the left eye, beginning at the external canthus, but stopping short of the corneal margin. About the center of this swelling could be felt and seen a distinct thickening and elevation of the sclerotic, but no ulceration. The pre-auricular gland and two cervical glands were enlarged.

Treatment and Result.—The first injection of tuberculin caused neither general nor local reaction. The second was followed by well-marked general reaction, but there was no local reaction until after the fifth injection, and this was only moderate. The patient was under treatment for five months and received in all fifty-four injections. Improvement began in the fourth week and advanced very slowly until at the end of the fifth month all the symptoms had subsided, leaving a somewhat discolored patch where the scleral infiltration had been located. There has been no return of the ocular lesion.

CASE 4.—Tuberculosis of the iris.

Patient.—A girl, aged 12, was brought to me in April, 1903, with the following history:

History.—She had had what was probably double iritis during an attack of inflammatory rheumatism six months before; the iritis lasted nearly two months, but finally cleared up and vision was restored to the normal. One week before I saw her the mother noticed a peculiar appearance in the right eye.

Examination.—I found in the infero-temporal quadrant of the iris a yellowish-red nodule, the size of a large pea, extend-

ing from periphery to ciliary margin, filling the angle of the anterior chamber and pressing against the cornea, and several smaller nodules in other parts of the iris. There was considerable ciliary injection and some pain. Syphilis could be absolutely excluded, and the diagnosis was between sarcoma and tuberculosis, with the odds in favor of the latter, as there was tuberculosis in the family, and the growths were multiple. The cornea over the tumor was striated. The rest of the media were clear, and the tension was normal. The pre-auricular gland was enlarged.

Treatment and Result.—This was the first case of tuberculosis of the iris in which I had an opportunity to try the treatment by tuberculin. The first injection produced very active general reaction, which lasted for nearly an entire day, and a decided local reaction in the eye, in which the nodule seemed to swell. Tuberculin was injected three times a week for ten consecutive weeks, and then once a week for four weeks longer, the patient receiving in all thirty-four injections. A noticeable improvement began at the end of the third week, the first symptom to disappear being the ciliary injection. At the end of the fourth week the smaller miliary nodules seemed to melt away, and the larger tumor began to contract. At the end of the tenth week this large tumor had all gone, the iris was discolored, but not perceptibly thinned, and the pupil could be dilated *ad maximum*. I saw this patient eighteen months later, and there had been no return of the growth.

CASE 5.—Tuberculous tarsitis of lower lid.

Patient.—A boy, aged 4, was first seen in April, 1904. His father died of pulmonary tuberculosis. The child had been well until three years old, when his mother noticed a swelling at the outer corner of the right lower lid. It was painless and there was no injection of the vessels or secretion. The swelling slowly increased without any other symptoms until one month before I saw him, when it became sensitive and a thin discharge appeared.

Examination.—When I saw him the outer four-fifths of the lid were involved, the tumor reaching the lachrymal punctum and involving the whole diameter of the lid from ciliary margin to near the orbital margin. On everting the lid, three points of ulceration were seen on the surface of the conjunctiva; one was rather large, but all were shallow and the base covered with miliary nodules. The pre-auricular gland and several cervical glands were enlarged and hard. The boy's general condition was bad. There were no evidences of pulmonary complication, but the bowels were very loose and he complained of abdominal pains.

Treatment and Result.—The first injection of the minimum dose caused pronounced general reaction and the second dose caused an increase in the swelling of the lid and in the amount of secretion. The general reaction was so severe that after the first week only one injection was given each week for four weeks. At this time the whole lid began to soften, the conjunctiva became less swollen, the sensitiveness disappeared, and the ulcerated surface began to clear. The boy was under constant treatment for five months, and received thirty-nine injections, the maximum dose being 0.012 mg. At the end of the fourth month the symptoms had all practically disappeared, but the treatment was continued for a month longer, as the patient's general condition was very much improved. There has been no return of the ocular disease, but the boy evidently has intestinal tuberculosis.

CASE 6.—Tuberculosis of all four eyelids.

Patient.—A little girl, aged 5, was first seen in July, 1905.

History.—The mother and maternal grandmother died of pulmonary tuberculosis, in spite of all that the possession of great wealth might do to prevent a fatal termination. The patient had always been frail, had a faulty digestion, and was of an excitable, highly nervous temperament. Two months before I saw her, a small lump appeared in each upper lid, and subsequently several others developed in both lids.

Examination.—When I saw her there were two small nodules in the right upper lid, one in the right lower lid, looking exactly like small chalazion. The whole of the left upper lid, the external canthus and the outer-third of the left lower lid were hard and swollen, but there was no ulceration of either skin or mucous surface. The pre-auricular gland and all the cervical glands on the left side were involved. The eyeballs were intact. Congenital syphilis could be positively excluded. A careful examination of the child revealed no other foci of disease. The urinalysis was normal, but the blood count showed a marked diminution in the number of red-blood cells.

Treatment and Result.—The first injection gave a decided general reaction and also a local reaction, the ocular conjunctiva becoming injected and edematous. The injections were given twice a week for twenty weeks. There was no sign of improvment till the end of the third week and then the lids of the left eye began to soften and the swelling diminished. At the end of the sixth week the nodules in the lid of the right eye had disappeared. By the end of the fourth month the upper and lower lids of the left eye had regained their normal dimensions and mobility, though the upper lid was still somewhat stiff. The child's environment had been of the best and she passed most of the day in the open air, and her general condition had greatly improved. She took forty injections, the maximum dose being 0.2 mg. The child has been under observation ever since and there has been no return of the lesion.

CASE 7.—Tuberculosis of conjunctiva and episclera.

Patient.—A little girl, aged 5, was first seen in January, 1905.

History.—No tuberculosis existed in the immediate family, but there were several cases in collateral relatives. The child was small for her age, but in excellent health. The disease began about a year before I saw her in persistent redness of the ocular conjunctiva, in the supero-temporal quadrant of the right eye, which in the course of a few weeks was followed by a series of small, miliary nodules. There was no pain, and at first no secretion. The redness and thickening of the conjunctiva gradually extended inward, outward, and downward, until when I saw her, it involved the entire temporal half of the ocular conjunctiva, and extended almost to the corneal margin.

Examination.—The whole tissue was much thickened and elevated, and presented a number of small nodules of a reddish-yellow color. A careful examination of the child did not reveal any other foci of disease. Media were clear and fundus was normal. The pre-auricular gland was enlarged, but there was no hypertrophy of the cervical glands. A portion of thickened tissue was removed for microscopic examination, but though numerous giant cells were found, there were no bacilli. A small piece was inserted into the anterior chamber of a rabbit, but caused nothing but a slight reaction which soon subsided.

Treatment and Result.—The first injection of tuberculin caused the typical general reaction, and the fourth a rather violent local reaction in the eye, with marked increase of the redness and swelling. This child received an injection twice a week for six weeks. Then owing to an attack of tonsillitis the treatment was discontinued for ten days. It was then recommenced and two injections were given each week for ten successive weeks. I could not discover any improvement until after the third week. Then the nodules seemed to flatten, coalesce and become merged with the general thickening of the conjunctiva, and the vascularity began to diminish. At the end of the third month the swelling had all gone, but the vascularity still persisted for another month. The child received in all thirty-two injections, beginning with the minimum dose and gradually increasing it to the maximum 0.5 mg. I saw the patient recently and there was no return of the lesion.

CASE 8.—Tuberculosis of the iris.

Patient.—A young man, aged 23, was first seen in September, 1905.

History.—He came of a tuberculous family on the paternal side, but his boyhood and youth had been healthy. For more than a year he had been treated for some obscure intestinal trouble, and also for an obstinate hypertrophic rhinitis. Two months before I saw him there appeared slight redness of the right eye on the nasal side, which persisted, and later the iris was discolored.

Examination.—When I saw him there was marked ciliary injection inward and downward, the inner half of the iris was discolored, there were posterior synechiæ, and in the infero-nasal quadrant was a yellowish-red nodule, as large as a pea, attached to the periphery of the iris by a broad base, and filling the angle of the anterior chamber. In the upper segment of

the iris were two smaller nodules, projecting into the anterior chamber. The pupil could only be dilated upward and outward. The vision proved to be only 15/200, and the ophthalmoscope showed a few yellowish red patches of exudation in the chorioid, all recent. These were not exactly like chorioidal tubercles, recently developed, though free from pigmentary deposits, but taken in connection with the nodules in the iris, their appearance was suspicious.

Treatment and Result.—The first injection of tuberculin gave both a general and local reaction, and the latter lasted for nearly a week, and was doubtless kept up by the following injections. This patient was under continuous treatment for about four months and received in all forty-six injections. An improvement was noticed after the third week, but the symptoms disappeared very slowly and it was not until three months and a half had elapsed that the eye regained its normal external appearance. The adhesions of the iris were all broken, and the iris regained its mobility and round pupil. The chorioidal patches flattened and faded, but did not disappear. Vision was eventually improved to 15/30. The other eye remained intact, and the general health of the patient was improved.

CASE 9.—Tuberculosis of conjunctiva and cornea.

Patient.—A young woman, aged 17, was first seen in October, 1905, with absolutely no tuberculous family history, and with the exception of an obstinate constipation, was in good health.

History.—Two months before I saw her the right eye became inflamed on the temporal side near the cornea, and there was some dull pain. The symptoms gradually grew worse, and when I saw her the ocular conjunctiva on the temporal side was very much thickened from the external canthus to the cornea.

Examination.—The appearance was that of an exaggerated pterygium with marked thickening of the conjunctiva and episcleral tissue spread out like an open fan, with the apex in the cornea. The latter was densely opaque in its lower half, and was ulcerated. The pre-auricular gland and the entire chain of cervical glands on the right side were enlarged. The upper part of the cornea was slightly hazy but the iris seemed normal, and the pupil reacted promptly. There was little or no secretion. A part of the thickened tissue was removed for examination, and showed numerous giant cells, but no bacilli. Inoculation experiments on a rabbit proved negative.

Treatment and Result.—The tuberculin TR injection gave promptly the general reaction, but it was not until the fourth injection that any decided local reaction in the eye occurred. This proved to be the most obstinate of all the cases in resisting treatment. She received three injections a week for twenty-two weeks, and after that two injections per week for three weeks longer, making in all seventy-two injections. At the end of the six months the redness and swelling of the conjunctiva had all subsided, but the cornea remained cloudy in its lower third. The haziness of the upper part of the cornea had disappeared and vision was much improved. The gland enlargement had subsided except in one lower cervical.

CASE 10.—Tuberculosis of conjunctiva and sclera.

Patient.—A boy, aged 14, was first seen in January, 1906.

History.—There was no tuberculosis in the family. The boy was in good health, but had suffered from a mild form of granular conjunctivitis in both eyes for some months. The left eye had been cured, but two months before I saw him a swelling or thickening of the ocular conjunctiva in the right eye, on the nasal side, appeared.

Examination.—When I saw him, the ocular conjunctiva was densely infiltrated from the caruncle to the corneal margin and about midway between the two there was a broad nodule with distinct elevation, the surface of which was ulcerated. The ulcer was shallow, and when cleaned, showed a reddish granular surface. The pre-auricular gland was enlarged. The cornea was clear and the iris normal. Conjunctival, ciliary and scleral vessels were engorged. No evidence of any pulmonary or intestinal disease existed, and if the ocular lesion were tuberculous, the infection must have come from without, through some abraded conjunctival surface.

Treatment and Result.—The first injection of tuberculin proved negative, as did also the second. The third injection, however, still of the minimum dose, gave a marked general constitutional reaction, and a slight reaction in the eye. At the fourth injection the dose was increased and caused a rather alarming increase in the injection and swelling of the conjunctiva, so that cold applications became necessary for twenty-four hours. This excessive reaction never occurred again. This patient was treated for five months, receiving in all sixty-two injections, but was discharged not cured, though somewhat improved. The ulcerated surface healed, and the large nodule softened, flattened and finally disappeared, but the general thickening of the conjunctiva and sclera remained, though decidedly less marked than at first. The ciliary injection disappeared and the conjunctival vessels were reduced in caliber, but very little impression was made on the scleral congestion. This case proved rather discouraging in the results gained from the treatment.

DISCUSSION.

DR. W. H. SNYDER, Toledo, Ohio, thought the results had been rather satisfactory, at least in the hospitals in which he has seen this work, with the ordinary and usual injections of tuberculin. A friend of his who has been doing this work for some years makes the positive statement that the injections given are much too strong, and much too frequent, and that about 1/100 of the dose should be given and the injections not oftener than two weeks. This gentleman is trying now to get a symptomatic index; a list of symptoms by which he can differentiate and tell when he can make the injections safely without making the opsonic count. His patients have done better under the new plan than under the old methods. Dr. Snyder said that it has been found that large injections given frequently, as has been customary, make a negative phase which lasts too long, and before the patient can recover another overwhelming dose is given, while the best seemingly can only be reached by making an opsonic count to determine the absolute result obtained.

DR. S. L. ZIEGLER, Philadelphia, stated that, of course, the opsonic index is the most important question to be considered now. The cases are to be observed most carefully by the clinician and the pathologist, but, as far as the application to work is concerned, the most important thing is to be able to make an early diagnosis of tuberculosis. The most provoking thing, he said, is to have a patient under observation for a considerable period without even suspecting tuberculosis. As soon as tuberculin is used there is a reaction; it may be local, or general; it will probably be both. Therefore, make the diagnosis as soon as possible so that the tuberculin can manifest its effect before the beginning of encapsulation. That gives the tuberculin an opportunity to get in its work early.

There are a number of lesions that are most interesting, but the one that has fallen most under Dr. Ziegler's observation is tuberculous keratitis. This must be differentiated from the specific variety of interstitial keratitis, which it very closely resembles. The characteristics are manifest; there is not quite the typical salmon-colored patch, but a rather close resemblance. Following that comes the isolation into nodes, and then the diagnosis can be made, but by that time there are deposits in Descemet's membrane, and vision will ultimately be lowered. Dr. Verhoeff has called attention to the presence of scleritis or episcleritis in these cases, and Dr. Ziegler thinks that is true. Many of his cases have first had an episcleritis, and as this disappeared or broke down the corneal lesion began. He does not think, however, that every case of episcleritis is tuberculous, but the suggestion is worthy of consideration—the test with the tuberculin method can be made.

Dr. Ziegler uses the "old tuberculin" of Koch. The TR. is rather a dangerous product to produce, as it is made from the active germs, triturated, dissolved, centrifuged and decanted. It is usually imported. The old tuberculin is simply a culture on glycerin broth, in which the growth is destroyed by a blast of superheated steam. It is made in this country, is not so dangerous as TR., and, though milder, has equal therapeutic value. Dr. Ziegler has found it thoroughly efficient.

DR. HERMAN KNAPP, New York, referred briefly to one of his contributions on tuberculosis of the eye, which was one of the papers in the Jubilee volume dedicated to Prof. H. von Helmholtz, by the Heidelberg Ophthalmologic Society, in

which he showed that there are two types of tuberculosis of the eye, which are an extension through the lachrymal duct of lupus in the nose. A small piece of tissue was taken from the conjunctiva, and inserted in the anterior chamber through a small opening in the upper part of the cornea. After four weeks the reaction was manifested. The iris and the ciliary body were swollen, but there was no circumcorneal congestion. The iris lacked luster and the pupillary ring was irregular. On the surface of the iris, there were many small white nodules, which gradually became fewer in number and smaller in size. The disease eventually seemed to disappear, yet, after several months, the eye again inflamed.

DR. WILLIAM H. WILDER, Chicago, pointed out that the followers of Wright and those who are studying the subject of tuberculosis from the standpoint of the opsonic index believe that it is dangerous to inject tuberculin without knowing first what the opsonic index is. If they are right in their conclusions, it is possible to determine by an estimation of the opsonic index whether there is any likelihood of the presence in the body of a tuberculous focus, because they claim that the wave of the index will be persistently lower than normal, except at such times as the individual is reinoculated from some tuberculous focus. That opens up a wide field of inquiry and if it is possible physicians should make such tests in their cases. But, if another observation is true, that of the pathologist, that in all cases that come to necropsy a large percentage show some tuberculous lesion somewhere in the body, we can appreciate the difficulty at arriving, from an ophthalmologic standpoint, to a clear knowledge of whether we are dealing with a tuberculous lesion in the eye. If we do get the lower wave it may indicate a lesion in some remote part of the body. So it seems that we can not rely absolutely on the conclusions of these men as to a diagnosis of an ocular condition. It would seem, therefore, that if we can resort to the old tuberculin we may be able to arrive at some positive conclusion. It would be well to study the case with the opsonic index, but at the same time, if we get the lower wave, we can with safety use the old tuberculin in 1 mg., later 3 mg., and then 5 mg. doses, because what we want to learn is whether the lesion we are studying is tuberculous, and if it is, we will also get a distinct local reaction, characterized by ciliary injection and increase of the symptoms. Of course, this must be done with careful taking of the temperature, and reducing any ciliary injection that may exist.

DR. JOHN E. WEEKS, New York, asked, in regard to the study of the opsonic index and of the production of opsonins in tuberculosis, whether it is of any particular value; can one rely on what is found? This question has been brought into doubt by the experiments that have been made by the bacteriologists of the Board of Health of New York. Dr. Parke has devoted much time to the study of this question and has found by control experiments that the opsonic index of quite a large number of individuals in health varies very markedly. He has found that he may take within an hour a half dozen specimens from the same individual, and there will be a difference in the index of at least 20 per cent. This has been found not only from his own work but also from the work of an assistant of Wright's, who has worked in Wright's laboratory for a long period of time. So before one concludes that this method of study is of great value, it must be thoroughly sifted out. Another question Dr. Weeks raised is, does the disturbance in temperature occasioned by the injection of tuberculin, either of the old or new, give a positive diagnostic answer? If it is true that many cases of tuberculosis exist that are not suspected during life, one may, as Dr. Wilder said, get a reaction that is true and which may yet have nothing to do with the disease in the eye. It is thought by some investigators that tuberculin produces a reaction in certain conditions that are not tuberculous. If it is positive that the reaction due to the injection of tuberculin is only met with when tuberculosis is present, then there must be a local reaction in order to determine whether the process affecting the eye is tuberculous or not. The general reaction is not sufficient. One can make a diagnosis by methods other than tuberculin, as in tuberculosis of the iris. Therefore, he thinks it is unsafe to say that a disease of the eye is tuberculous unless one obtains a local reaction from tuberculin or can diagnose the case without the aid of tuberculin. Dr. Weeks has been struck with the remarkable results that Dr. Bull has been fortunate enough to obtain in many of his cases. In two of the cases of tuberculosis of the iris he has had recovery in two months. A patient he has had under observation has been under treatment 16 or 17 months without getting well. There has been reduction in the volume of the mass; it is a conglomerate tubercle of the iris, and the patient is undoubtedly recovering, but extremely slowly.

DR. ALBERT E. BULSON, JR., Fort Wayne, Ind., said that the reaction following an injection of tuberculin should not always be considered as conclusive evidence of the existence of tuberculosis in the patient, as there may be a coincident rise of temperature. He has seen coincident rise of temperature in two cases in which subsequent tuberculin injections produced no reaction. Two or more reactions following as many injections of tuberculin should be required to establish a diagnosis of ocular tuberculosis, and in addition to the general systemic reaction, there should be a local reaction in the eye. Another feature of significance in these cases which should always be looked for is the afternoon and evening rise of temperature. Regular afternoon rise of temperature occurs in every case of tuberculosis of the eye, and should be counted a manifestation of importance in arriving at a diagnosis. The rise may not be much, but even a slight rise is significant. The effect of tuberculin as a therapeutic agent is good in some cases, particularly those in which there are not extensive tuberculous lesions in addition to those in the eye. He has had under his observation for sixteen or eighteen months a case of tuberculous iritis in which there were numerous nodules in the iris, the diagnosis having been made by repeated diagnostic injections of tuberculin, the reaction occurring on several occasions. While the tuberculin treatment has produced a marked improvement in the general health, the ocular condition has not improved, but has continued on to practical destruction of the eye. It this case he noted that the injections had to be varied in amount and time of administration on account of varying effects. Perhaps the fluctuation of the opsonic index had much to do with the relative increased reaction at certain times.

DR. G. W. VAN BENSCHOTEN, Providence, R. I., stated that some years ago, while doing experimental work for tuberculosis in adenitis and tonsillitis, he saw two cases of what was diagnosed as phlyctenular keratitis, and in one child there was marked local reaction following the use of tuberculin. This subsided in several days, but the process continued. In about three weeks another injection was given, with a severe reaction taking place in the eye. He wondered if this could possibly be a tubercular condition causing the phlyctenular keratitis. No further experiments were made in the use of the tuberculin in this case, but more recently, in view of the literature on the subject, he has wondered if that condition was tuberculous. The case was a long-standing one, clearing up at times.

PROF. CARL HESS, Würzburg, Germany, has used tuberculin for diagnosis in about 100 cases, and has been astonished to find in more than 50 per cent. of them that there was a general reaction. In Germany it has been believed for 15 or 16 years that iritis may be caused by any tubercular disease. Local reaction was found in one or two cases. As to treatment: Tuberculous disease of the eye may heal without any treatment. That seems to be a contradiction of the generally held views and when it was first learned that these cases might be tuberculous he thought it must go on until the whole eye is destroyed. There has been observed a most interesting case in a child of four or five years, where there were many little nodules in the iris. Some of these were excised and injected into the eye of a rabbit, and proved to be tuberculosis. Nevertheless, the eye healed without treatment.

There are, he said, many diseases of the cornea which we do not know the cause of, especially interstitial diseases. Of course, about 80 per cent. of these are due to syphilis, but he believes many are due to tuberculosis. He has seen one or two cases in which after the injection of tuberculin there was a reaction, and it would be very interesting to clear up

these cases experimentally. It has repeatedly been noticed after the inoculation of rabbits that opacities similar to those of interstitial keratitis were produced. It seems probable, he said, that some cases of interstitial keratitis are of tubercular origin. The most difficult question is that of phlyctenular disease. It has been said that these cases are caused by the staphylococcus and that by introducing staphylococci into the sac one can produce phlyctenules, but Dr. Hess is convinced that it has nothing to do with the staphylococcus.

DR. C. S. BULL, New York, said that he approached this subject in the beginning from a skeptical standpoint. He is still largely a skeptic, especially as to the effects of tuberculin as a method of treatment. In some of the cases reported in his paper after an interval had been allowed to elapse since the last injection of tuberculin, he injected hypodermically bichlorid of mercury; in another saturated solution of chlorid of sodium. In every one of these cases he got a general reaction, with rise of temperature, sometimes as much as 2 degrees, showing that there are other substances that will produce this reaction. But, he did not in these get any local reaction.

It is alleged, he said, that one must begin with minute doses, watch the effect and if the general reaction be severe, let the interval between the injections become longer and longer. Some years ago he was using the old tuberculin in a number of cases of supposed tuberculosis as a method of treatment and got absolutely no results. The reactions from the new tuberculin are sometimes very severe, and it can not yet be stated positively whether or not the theory of the opsonic index in these cases is of any value, and in the case of new ideas or the application of new remedies it behooves the conservative man to go slow. It is known that many of these cases, especially those of tubercular iritis, heal without any specific treatment. Therefore, Dr. Bull still stands in the position of a skeptic.

A PARABOLIC REFLECTOR FOR THE ILLUMINATION OF TEST-TYPES.*

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Under present-day considerations it is imperative that artificial illumination be used for the lighting of test-types. The quality of the light produced, its location and distribution with reference to its proper reflection, are matters which have to be observed in order to obtain an even and constant illumination over the whole surface of the card. The ideal condition, that of daylight, which we should endeavor to imitate, is one of nearly perfect diffusion. An even illumination over the whole surface of the test-type card, approximating daylight, can only be obtained with artificial lighting by means of a proper reflecting surface. The most common fault with the lighting of test-types is the improper care in the selection of the reflector and the position of the lamps. The reflector has been installed and selected in a haphazard way, and the resulting illumination left to be what it may. As a consequence, with installations of this kind there are spots and streaks of light on the surface of the card, plainly indicating the location of the lamps, and the obvious difference of intensity on the portions of the card farthest removed from the light source. Believing that some attempt ought to be made to design a reflector based on exact scientific principles, so as to give uniform illumination under a simple law, the following problem was undertaken. The principle involved is the reflection from a paraboloid of revolution, viz., a beam of parallel rays falling on a paraboloid or light emanating from the focus of the paraboloid is reflected by the paraboloid as a beam of parallel rays. It is to be remembered that only when the luminous object at the focus is a point will rays diverging from it be reflected in a parallel beam. The nearest approach to parallelism occurs with the incandescent light, in which case the illuminated surface is very small. As a basis for calculation, one must first determine the point on a plane surface where the illumination is a maximum from the law, that the illumination of a plane surface by a luminous point varies directly as the cosine of the angle of incidence of the rays and inversely as the square of the distance of the luminous point from the surface.

Let P (Fig. 1) be the luminous point, at a distance *a* above the surface AD. To find the point B where the illumination is a maximum. By above law,

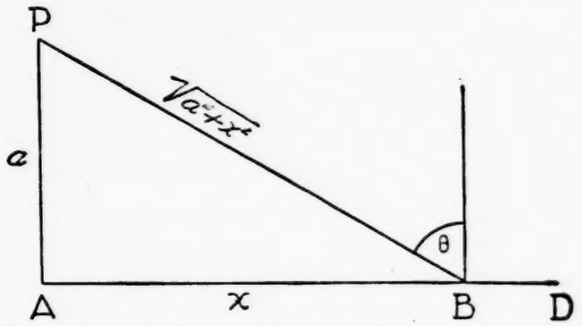

Fig. 1.—Diagram showing illustration of a plane by a luminous point.

$$\text{Ill.} = K\frac{x}{(a^2+x^2)^{3/2}} \quad \text{where K is some constant.}$$

$$\text{Let } u = \frac{Kx}{(a^2+x^2)^{3/2}}$$

$$\text{For maximum value } \frac{du}{dx} = 0,$$

$$\frac{du}{dx} = K\frac{(a^2+x^2)^{3/2} - 3/2x(a^2+x^2)^{1/2}(2x)}{(a^2+x^2)^3} = 0,$$

$$\text{or } K\frac{a^2+x^2-3x^2}{(a^2+x^2)^{5/2}} = 0,$$

$$\therefore x = \frac{1}{\sqrt{2}}a. \quad (1)$$

Let AC = 2.5 ft. (average length (Fig. 2) of card in use). Make AD = 3.25 ft. The value is arbitrary, but found to be the best value, as the longer CD is, the greater would be the length of BF. The value of CD was taken as small as possible and still have the card AC in full view of the patient's eye. Substituting the values of *x* and *a* in (1), we have:

$DF = \frac{1}{\sqrt{2}}$ (AD) = 2.31 feet. The light is to be placed at F which is to be the focus of the parabola. Let FK = 1/3 ft., then FM = 2/3 ft. (law of a parabola).

By experimenting it was found that the best distance for FK, the distance from the focus to the vertex, was 4 inches, or 1/3 ft. If FK were much smaller, then the width of the reflector would be too small, and a larger value of FK would make the width unnecessarily large.

$y^2 = 4px$ (the parabola).

Therefore $4/9 = 4p\ (1/3)$, therefore $4p = 4/3$ and $y^2 = 4/3x$, is the equation of the parabola with focus at F.

The width of the parabola must be as great as CG and from similar triangles ACG and DBF, the value of

*Read in the Section on Ophthalmology of the American Medical Association at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

CG = SR is found to be 1.9 ft., or approximately 2 ft. From the equation of the parabola $y^2 = 4/3x$, when $y = 1$, $x = 3/4$, that is KL = 3/4 ft. and FL = 5/12 ft. The focus is (1/3, 0), and LK = 3/4 ft., and LS = 1 foot.

Having determined on the kind of reflector and the illuminant, the next step in the problem is to find the distribution curve, in order properly to place the reflector so as to secure uniform illumination on the test-card. To the kindness of Mr. J. R. Cravath, an illuminating engineer, I am indebted for the following data with reference to the light distribution from an ordinary commercial parabolic reflector, using an incandescent lamp: The curve in Fig. 3 is Fig. 16 B, taken from a paper on "Data on Indoor Illumination," by Mr. J. E. Woodell.[1] This gives a photometric curve, showing the light distribution about one of the common parabolic reflectors known as the "D'Olier," No. 35. The reflector constructed on the foregoing calculations will not give a

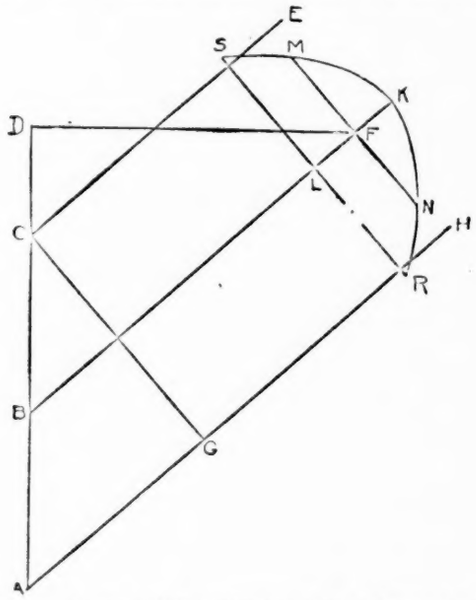

Fig. 2.—AC, card; SKR, reflector. Scale ¾ in = 1 foot.

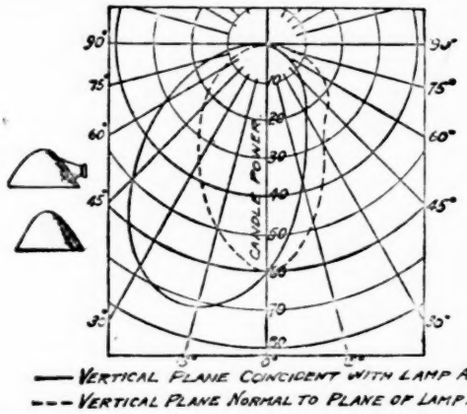

Fig. 3.—Photometric curve showing light distribution about one of the common parabolic reflectors known as the "D'Olier" No. 35.

distribution of light similar to this in all planes, but it is safe to assume that in a plane at right angles to its axis the distribution of light is somewhat similar to that obtained from the D'Olier reflector shown in Fig. 3. In order properly to understand the theory of placing reflectors so as to secure an even illumination of test-cards, take an example, using the photometric test shown in Fig. 3. The dotted curved line which gives the distribution of light in a vertical plane at right angles to the lamp axis comes nearest to representing the conditions with the reflector constructed. The characteristic of this reflector, as well as of many other concentrating reflectors, is that the maximum candle power is obtained directly underneath the lamp when the lower edge of the reflector is placed in a horizontal position. The candle power rapidly falling off as the angle from the vertical increases.

This fact is of very great value in enabling us to place reflectors so as to illuminate test-cards and pictures evenly. It is of the utmost importance to have a uniform illumination over the entire surface of the test-card, because if the top is more highly illuminated than the bottom there is a possibility that it will affect the acuity of vision. In fact, if the top of the card is more brightly illuminated than the lower part, the lower part seems dark by contrast, even though the illumination on the lower part might be ample if the brightly illuminated upper part were not in view. Taking now the photometric curve of the reflector, as shown in Fig. 3,

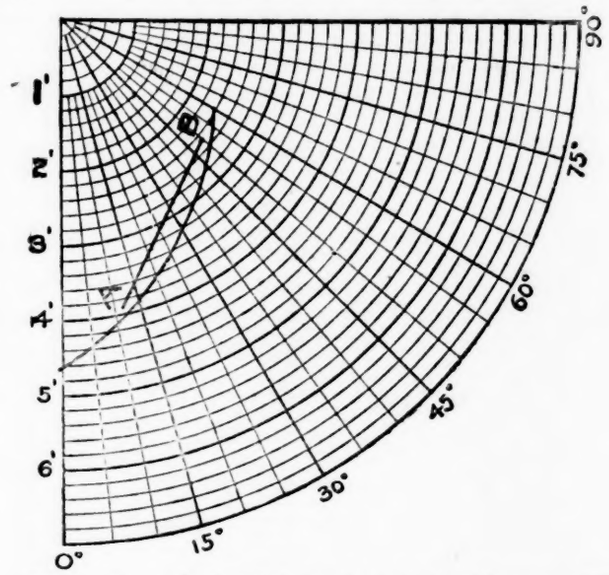

Fig. 4.—Curve showing distances in feet at which an equal illumination in foot candles would be produced by a "D'Olier" parabolic reflector. AB is proper position of card. Scale ½ inch = 1 foot.

the problem is to determine the position in which to place the reflector so as to illuminate the test-card uniformly, and at the same time have it in a position where it will not be between the patient and the card, and also where the light will not shine in the patient's eyes. This can easily be done, for the reason that the illumination on any surface is according to the formula $I = \frac{cp}{d^2}$ where I equals the illumination on the surface in foot candles, *cp* equals the candle power of the ray, and *d* equals the distance of the surface from the source of light. Now it will be apparent at a glance that the lamp in such a reflector can be so placed with reference to a test-card that the rays of maximum intensity from the reflector will fall near the bottom of the card, while the rays of less intensity will fall near the top, and we can thus approximate uniform illumination of the card, even though the top of it may be much nearer the source of light than the bottom.

The proper position of the source of the light with

1. Read at the October, 1906, meeting of the Illuminating Engineering Society.

reference to the card can be determined by trial in a few seconds, but it is also interesting to work out the problem mathematically and see how nearly theory will check up with practice. To determine the proper position of the reflector by caculation, a curve of equal illumination is plotted for the reflector, as proposed by Mr. E. C. White[2] in a paper on "Application of Photometric Data to Indoor Illumination." Let us take the right-hand side of the dotted curved line in Fig. 3. Fig. 4 is a polar coördinate curve in which the distance from the center represents the distance in feet at which an even illumination in foot candles would be produced by a reflector giving a photometric curve, such as is shown in Fig. 3. The plotting of such a curve is a simple matter when we have the photometric curve as a basis, since the equal illumination curve is determined by the formula $d = \sqrt{\frac{cp}{I}}$ where *d* equals the distance in feet of the surface illuminated from the source of

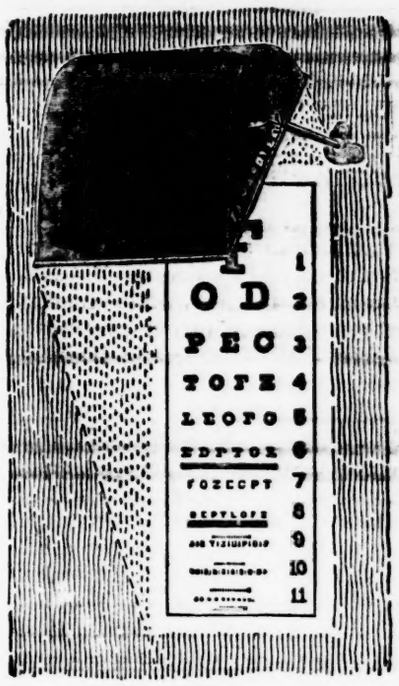

Fig. 5.—Sketch showing reflector in position on wall in its relation to test type.

the light, *cp* equals the candle power of the ray, and I equals the illumination in foot candles. If I is taken as a constant quantity, then $d = \sqrt{cp}$ and the equal illumination curve represents simply the square root values of the photometric curve. Fig. 4 is plotted on a scale which gives the distances in feet from the lamp at which a uniform illumination of 3 foot candles, this value being assumed for purpose of calculation, would be obtained from the reflector shown in Fig. 3. Having this uniform illumination curve, we can at once draw in parallel to the curve the proper position or angle for the test-card. The proper position of the test-card is thus represented by the line AB in Fig. 4. As the line AB is at an angle of about 25 degrees from the vertical, and since the test-card is always hung vertical, it is to be noted that the reflector should be tipped at an angle of about 25 degrees from the horizontal, and that the top of the test-card should be about 15 degrees below a horizontal plane passing through the lamp. This corresponds very closely to the position found to be the best with the reflector described above.

The reflector (Fig. 5) can be made of either copper, galvanized iron or tin. The reflecting surface is coated with aluminum paint, and on either side of the reflector, at the focus of the parabola, is placed an ordinary electric lamp socket. A piece of gas piping, 9/16 of an inch in diameter, with a thumb-screw attachment at the reflector end and a wall bracket at the other end, holds the reflector in place. The wires from the electric light socket are run through the piping, so as to be out of the way, and joined together with a plug for connection.

I wish to thank Messrs. F. A. Hardy and Company for their assistance in the construction of the reflector.

DISCUSSION.

DR. WILLIAM M. SWEET, Philadelphia, said that the reflected light is preferable to direct light. With a reflected light an illumination is obtained that does not tire the eyes.

DR. MORTIMER FRANK, Chicago, said that with this reflector one can get any candle power from 3 to 50. The photometric curve in the paper was calculated for 3 candle power.

2. Read before the October, 1906, meeting of the Illuminating Engineering Society.

A CASE OF FATAL HEMOLYSIS FOLLOWING DIRECT TRANSFUSION OF BLOOD BY ARTERIOVENOUS ANASTOMOSIS.*

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AND
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PHILADELPHIA.

Since the report by Crile[1] in November, 1906, of several cases of severe anemia in which direct arteriovenous anastomosis and transfusion of blood was made use of in the treatment of the anemia the method has been tried, at times with favorable results and at others without much apparent change in the course of the disease.[2] No serious ill effects have been reported so far as having been caused by this method of treatment, and we, therefore, believe that the following report of a case of fatal hemolysis after two transfusions of blood from different individuals should be placed on record in order to show that the procedure is not without danger and that until our knowledge of the hemolytic action of different sera is more exact it should be used with caution.

Patient.—C. J. G., aged 33, white, married, born in England. Referred April 16, 1907, by Dr. Frank Harris, Trenton, N. J., to the Hospital of the University of Pennsylvania, service of Dr. Stengel. Complained of bleeding from gums.

History of Present Illness.—Some time before October, 1906, it was noticed that the patient's complexion, though naturally pale, was becoming paler, though he had been in apparently good health up to that time. Tinnitus aurium, and a very slight intermittent nightly bleeding from the upper gum began at this time. He had been able to be about on his feet, but had gradually grown weaker during this period. Dizziness, palpitation of the heart, and pains in legs were occasionally present. He had gained six pounds in weight in the last ten weeks; for a time he noticed that his vision was dim. The bleeding from the upper gum was at first noticed at night only, but it gradually increased in severity, occurring day and night for ten weeks preceding his admission, though intermittently, and during the last four days preceding admission con-

* From the William Pepper Laboratory of Clinical Medicine.

1. THE JOURNAL A. M. A., Nov. 3, 1906.
2. Watts: Johns Hopkins Med. Bul., May, 1907.

stant bleeding had occurred. Patient was kept in bed under a physician's care for seven weeks, beginning about Jan. 15, 1907. He grew somewhat better at the end of that time and went to work. On April 13, 1907, bleeding and other symptoms forced him to stop work again. Physicians told him he was losing blood in his urine, and by the bowel (after examination of urine and feces). He had noticed no edema. No hemophilic nor scorbutic history.

Previous Medical History.—Patient had none of the diseases of childhood. Had nervous indigestion six years ago; otherwise has been a very strong man.

Social History.—Patient at 21 years became a machinist, doing hard, manual labor ever since. About 11 years ago he had a sore on his penis, hard and persistent; a rash followed this, and he was treated for six months for syphilis. Was married ten years ago; wife had one miscarriage and one living child, which has coxalgia. He used tobacco and tea moderately, occasionally drank beer, rarely whisky. Had a good home and good food.

Family History.—Father and mother were living and well. Patient had fifteen brothers and sisters. One brother died of apoplexy and one of injury. One sister died of a peculiar (non-anemic) wasting disease. No history of renal, cardiac, or pulmonary disease.

Condition on Admission.—Temperature 98 F.; pulse, 108; respiration 22. Patient walked to the hospital, looking extremely anemic, but not dyspneic or weak.

Physical Examination.—Patient was a dark-complexioned man, fairly well nourished, and with good musculature. Skin uniformly throughout body had a dirty lemon color. No edema nor cyanosis present. Peripheral arteries were soft; pulse of low tension, easily compressible, moderately rapid and quickly receding. No capillary pulse. Lymphatic glands were palpable in axilla and groin and one beneath the jaw. Conjunctivæ very anemic; sclera showed a glistening pearly-white luster; pupils equal; pupillary reflexes normal. Ears showed a waxy-like pallor. Alæ of nose moved with respirations. Lips were very pale and blood stained. Tongue very pale and coated with mucus and blood. Upper gums, especially anteriorly, oozed blood continuously; slight oozing from lower gums. No blue line at edge of teeth; teeth were somewhat decayed at gum margin. Oral mucous membranes very pale. Neck shows marked pulsations, arterial in type. Thorax rounded and fairly well muscled. Respirations equal on either side, expansion good, breathing costo-abdominal. Lungs were normal as to vocal, tactile fremitus, and resonance, which extended from the sixth right rib to apex anteriorly on right side, and posteriorly to level of tenth dorsal vertebra. Breath sounds were vesicular in type; no râles. Heart: Apex beat extended over several interspaces, but was seen best in fifth interspace, within the left midclavicular line. A feeling suggesting a thrill on palpation. Cardiac dulness: Above third rib; right, 1 cm. beyond right sternal margin; left, about the anterior axillary line, 3 cm. beyond nipple line. A loud first sound, accompanied by a rough, loud murmur, heard best at apex, not transmitted. A systolic murmur was also heard in third interspace, not transmitted to vessels of neck, where a humming sound was heard over their course. The second murmur was the higher pitched. Pulmonary second sound was accentuated. Abdomen was of normal rounded outline; slight panniculus. Liver and spleen were not palpable. Retroperitoneal lymphatic glands were not palpable. Abdomen was generally tympanitic on percussion. Liver dulness extended from right midclavicular, sixth rib, to rib margin. Splenic dulness began at ninth rib in midaxillary line, and soon blended with colonic tympany about the eleventh rib. Limbs were well muscled. Nails bitten and anemic.

Urinalysis.—Straw colored urine, flocculent sediment; odor, normal; sp. gr., 1016; acid; mucus, plus; leucocytes, plus; erythrocytes, minus; squamous epithelia, plus; a few calcium oxalate crystals; a few bacteria.

Blood.—Hemoglobin, 20 per cent.; r. b. c., 970,000; w. b. c., 3,600. (See chart and table for further examinations.)

Blood Pressure.—Systolic, 120; diastolic, unobtainable.

Stool Examination.—Formed, hard, dark and tarry, somewhat offensive. Microscope showed erythrocytes, and undetermined crystals. Occult blood, very marked positive reaction.

The bleeding continued in small amounts and patient lost ground steadily.

April 24: 2,000 units diphtheria antitoxin were injected in the hope of influencing a possible undiscovered infection, whatever its nature.

April 25: The patient is losing ground daily. Lost several ounces of blood from the mouth last night in spite of various local applications and mouth-washes. Seems paler daily.

It was evident at this stage of the case that the patient was suffering from some obscure type of hemorrhagic disease rather than from any of the more definite forms of blood disease. Careful inquiry failed to disclose any history of hemophilia in his family. Scurvy was negatived by the absence of characteristic changes in the gums, or deep (intramuscular or subdermal) hemorrhagic effusions or of a suggestive history. The morphology of the blood as well as the blood count excluded ordinary pernicious anemia, and the patient was quite certain that his pallor followed the bleeding from the gums. Had the reverse been the case such persistent bleeding from the mouth could not well be ascribed to pernicious anemia; no such tendency to uncontrollable hemorrhage occurs in that disease. The blood picture more closely resembles that of so-called aplastic anemia, but the fact that the anemia seems to have followed the hemorrhage rather than to have occasioned it caused us to exclude this diagnosis. The possibility of the patient having acute leukemia was considered and the fact that cases have been recorded in which this disease has existed and even terminated fatally with leucocyte counts no higher than those obtained in our case was considered. We felt, however, that the degree of lymphocytosis and the general morphology of the blood did not justify this diagnosis.

For all of these reasons the conclusion arrived at was that the patient was suffering from some type of obscure hemorrhagic disease of unknown etiology. The rapid increase of the anemia with the persistence of bleeding caused us to place the patient under the care of Drs. C. H. Frazier and J. E. Sweet for direct transfusion, the patient's wife offering to furnish the blood.

April 26: Patient passed a very bad night, bleeding continuously from gums. Tinnitus aurium was very severe. Nausea present in high degree. Seemed to be sinking very rapidly. At 5:52 p. m., after anastomosis by Dr. Sweet of the left radial artery of patient's wife with a large vein at left elbow of patient, clamp was removed and transfusion begun. Transfusion ended at 7:25 p. m. Both husband and wife stood operation well. During the operation the patient vomited considerable quantities of dark grumous material.

Blood, 5:50 p. m.

R. B. C.	420,000
W. B. C.	4,200
Hb.	12 per cent.
Pressure	100

Differential Count.

	Per cent.
Polymophonuclear	41
Large mononuclear	0.5
Transitionals	2.5
Lymphocytes	54.5
Eosinophiles	1.5

Blood, 6:15 p. m.

R. B. C.	920,000
W. B. C.	1,800
Hb.	15 per cent.
Pressure	118

Differential Count.

	Per cent.
Polymorphonuclear	28
Transitionals	3
Large mononuclears	0
Lymphocytes	68.5
Eosinophiles	1

Blood, 7:15 p. m.

R. B. C.	1,001,000
Hb.	21 per cent.
Pressure	115

Differential Count.

	Per cent.
Polymorphonuclear	44
Large mononuclear	2.5
Transitionals	3
Lymphocytes	49
Eosinophiles	1.5

Pulse rate, 120-130 throughout operation. (See blood charts and table.)

April 27: Patient passed a fair night. Bleeding from gums almost entirely ceased immediately after transfusion and did

not recur. Tinnitus aurium entirely ceased in one ear and was better in the other. Had not vomited since transfusion. Color a great deal better. No jaundice noted.

April 28: Patient continued to feel stronger and much better. Bleeding from gums was merely a trace. Stomach not very retentive. At 5:35 p. m. a vein was exposed in upper left arm by Dr. Frazier. This was found not suitable to the left radial artery of patient's brother-in-law, which was being exposed at same time. Another vein in patient's lower arm was exposed and an arteriovenous anastomosis done by Dr. Sweet. Blood was allowed to transfuse from 6:33 p. m. to 7:37 p. m. Patient visibly reddened during operation. The donor grew somewhat sick at stomach, but otherwise stood the operation well.

Blood before transfusion, 6:30 p. m.: R. B. C., 1,270,000; W. B. C., 2,450; Hb., 21 per cent.; pressure, 122.

Blood after transfusion was begun, 6:55 p. m.: R. B. C., 1,370,000; Hb., 23 per cent.; pressure, 140.

Blood, 7:15 p. m.: R. B. C., 1,580,000; Hb., 29 per cent.; pressure 145.

Blood at end of transfusion. 7:30 p. m.: R. B. C., 1,800,000; Hb., 36 per cent.; pressure, 142.

Blood, differential, 7:30 p. m.: Polymorphonuclears, 11.6 per cent. lymphocytes, 83.3 per cent.; large mononuclear, 0.3 per cent.; transitionals, 0.6 per cent.; mast cells, 0.3 per cent.; eosinophiles, 0.3 per cent.; myelocytes, 0.3 per cent.; microcytes, macrocytes. No nucleated red cells.

10:00 p. m., Blood pressure 142.

Later in the evening the patient lay in a flushed, warm, lethargic condition, probably influenced somewhat by morphin given at operation. Much sweating. No jaundice by artificial light. Temperature, 102 F.

April 29: Patient this morning was very jaundiced. Stomach had not been retentive since operation. Expectorates green mucoid material from throat. No bleeding from gums. Temperature rose in the afternoon to 104 F. Arm somewhat painful and swollen. Hand edematous. No pus in wounds. Spleen palpable. Urine contained urobilin, hemoglobin, some free blood and many casts. Blood pressure, 115.

After the first transfusion (wife's blood) the urine showed slight reddish discoloration and slight amount of urobilin, suggesting hemolysis, but this had nearly disappeared when the second transfusion (brother-in-law's blood) was undertaken. During the night after this second transfusion the urine changed to a marked bloody character and subsequently showed a direct proportional relation with the jaundice, oppression, and other evidences of hemolysis. (Details regarding the metabolism and hemolytic features in the urine will be reported by Drs. Stengel and Edsall.)

April 30: Passed a poor night. Jaundice worse. Stomach still not retentive. Temperature still high. Arm condition the same. Mouth very dry, but no bleeding.

May 1: Was in a very low state. Blood pressure, 105. The patient sank rapidly and was removed to his home in Trenton, where he died May 3, 1907.

The patient's temperature during the first ten days he was in the hospital was usually slightly above normal, reaching on one occasion 101 F. The pulse was always higher than normal, ranging from 80 to 120. The respirations ran between 22 and 32. During the last week the patient was in the hospital the temperature, pulse and respirations were higher, the temperature reaching 104 F., the pulse 125 and the respirations 39 and never coming down to normal. An effort was made to determine if the blood serum of the patient was hemolytic to normal red blood corpuscles.

Sterile blood was collected from the patient eighteen and thirty-six hours after second transfusion. The blood was allowed to coagulate and the serum used for the following tests: A 5 per cent. suspension of washed normal red blood corpuscles in 0.85 sodium chlorid solution was prepared. The serum of the patient was mixed with the suspension of red corpuscles in varying proportions. The mixture of serum and corpuscles was kept in an incubator at 37 C. (98.6 F.) for two hours. On removal no evidence of hemolysis was observed. The result was also negative after the incubated mixture had been kept on ice for twenty-four hours. The mixture when prepared as above and an activating substance supplied by adding normal serum, also failed to show hemolysis.

Throughout the patient's stay in the hospital a number of examinations of the blood were made which were of considerable interest. The type, as judged from the study of the stained specimen, was that of a secondary anemia. A remarkable feature was the fact that on only a few occasions were nucleated reds found and then only in very small numbers. These were all normoblasts, and not more than ten or twelve were seen altogether in the many slides examined. Poikilocytosis and polychromatophilia were constant. The leucocytes were normal in appearance.

A study of the table of the various leucocyte counts shows that the absolute number of lymphocytes was practically always higher than that of the neutrophiles, but was never higher than 2,289. The lymphocytes ran at a more regular figure than did the neutrophiles, which

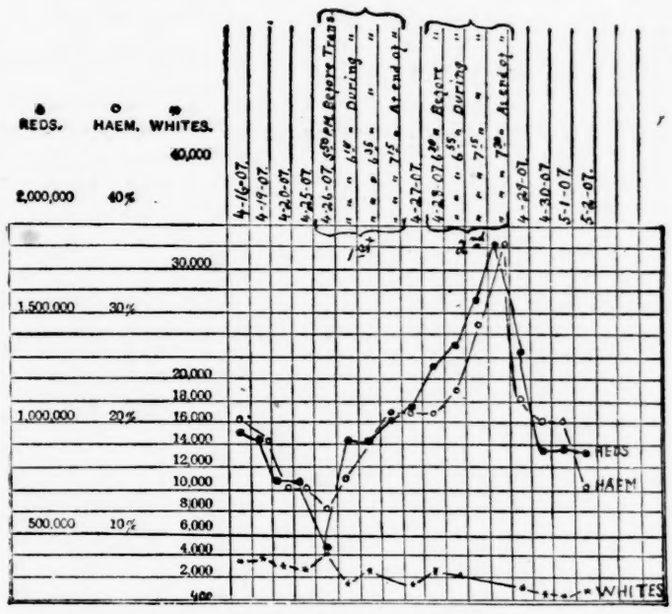

Chart of the patient's blood.

were affected by both transfusions, dropping much below the normal figures. The eosinophiles were normal in number. Very few basophiles were found. Only one myelocyte was seen.

The chart here given demonstrates diagramatically the extreme grade of the anemia, the improvement in the hemoglobin percentage and in the red cell count, following the transfusions, and the rapid drop succeeding the second.

The color index, as can be easily seen, was usually above normal. There was a constant leucopenia, the total count per c.m. dropping May 1, the day before the patient left the hospital and three days after the second transfusion of 400 per c.m. Determinations were made of the hemoglobin, red and white cells before and during both transfusions, and an effort was made in this way to estimate approximately the amount of transfused blood.

Twelve hours after the second transfusion it became evident that a rapidly increasing hemolysis had developed and this persisted until death. Jaundice set in

promptly and deepened until it was intense; the patient's temperature, which was a little higher after the first transfusion than previously, became still more elevated, fluctuating between 100 F. and 104 F. and the rates of the pulse and respiration became correspondingly higher. The urine quickly became blood red and, though at times a little lighter colored, did not change materially to the end. The patient was intensely restless and irritable, all food taken by the mouth and even water was promptly rejected, and the bowel proved equally unretentive. Petechial hemorrhages appeared in various places and there was active and increasing hemorrhage from the mouth and nose. The liver increased in size and was somewhat tender to pressure. The spleen was recorded as being palpable.

There was no doubt of the nature of the condition, which was typically that of intense hemolysis, and it is mainly on account of this event that the case is worthy of publication. It seems to have been too implicitly believed that the transfusion of human blood into another human being is incapable, apart from such accidents as embolism, thrombosis or infection, of causing untoward results and especially that hemolysis will not take place. It is true that Ehrlich and others who have investigated hemolysis in animals have called attention to the fact that iso hemolysins occasionally appear, and Eisenberg has reported some investigations of this question in its relations to the blood of various diseases. Nevertheless there has been no serious doubt of the innocuousness of introducing blood from normal individuals into other normal persons, or those suffering from hemorrhage or disease, providing the technical accidents could be obviated by some such refined procedure as that reported by Crile. The fallacy of this belief is illustrated in the case herewith reported.

When we come to consider the possible cause of the intense hemolysis which destroyed our patient our attention is at once called to the fact that the first transfusion was followed by but a suggestion of hemolysis (evident in some discoloration of the urine and by the presence of a small quantity of urobilin, neither being positively attributable to the transfusion rather than to the patient's disease), and in the second place to the prompt appearance of marked hemolysis after the second transfusion. One receives the impression that the first transfusion may in some manner have caused the formation of hemolytic bodies which after the second transfusion found abundance of vulnerable corpuscles for their operation. We do not feel that there are sufficient data to warrant our expressing any opinion as to the rôle ascribable to second transfusions or to transfusions of blood from more than one individual. It may be recalled, however, that Crile has reported one case of successive transfusions of blood from two brothers of the patient without any hemolysis being noted. Some experiments in animals and studies of sera and corpuscles of man undertaken in this laboratory since the occurrence of our case have thus far failed to throw any light on the matter.

We can not omit mentioning the injection of a dose of diphtheria antitoxin some days previous to the first transfusion, especially as the studies of Theobald Smith, Rosenau and Anderson and others have indicated possibilities of danger in secondary injections. These studies, however, have shown no hemolytic results and have in addition been concerned with secondary injections of the same heterologous serum and not with homologous blood or serum after foreign serum.

The published cases of Crile and others indicate the probable safety of the operation of transfusion in post-hemorrhagic cases, but the results in our own indicate the danger in certain pathologic conditions and the necessity of caution until we are in possession of greater knowledge. At the same time the possibility of benefit may justify transfusion in apparently desperate cases.

TABLE SHOWING ABSOLUTE AND RELATIVE DIFFERENTIAL LEUCOCYTE COUNTS AND TOTAL LEUCOCYTE COUNT PER C.MM. OF BLOOD.

	4-16-07.	4-19-07.	4-25-07.	Before trans. 5:30 p. m. 4-26 07.	During trans. 6:15 p. m.	During trans. 6:35 p. m.	At end of trans. 7:15.	Before trans. 6:30 p. m. 4-28-07	At end of trans. 7:30.	4-29-07.	4 30-07.	5-1-07.
Neutrophiles	1494	1404	767	1722	504	×	....	×	....	570	175	210
Per cent.....	41.5	36.	29.5	41.	28.		44.		11.6	45.3	35.	52.5
L. Mononuc.	108	156	0	21	0	×	....	×	....	20	5	0
Per cent.....	3.	4.	0.	.5	0.		2.5		.3	1.6	1.	0.
Transit.	36	390	52	105	54	×	....	×	....	45	15	4
Per cent.....	1.	10.	2.	2.5	3.		3.		.6	3.6	3.	1.
Lymph.	1872	1911	1742	2289	1224	×	....	×	....	604	305	184
Per cent.....	52.	49.	67.	54.5	68.		49.		86.3	48.	61.	46.
Eosinoph.	90	39	39	63	18	×	....	×	....	16	0	2
Per cent.....	2.5	1.	1.5	1.5	1.		1.5		.3	1.3	0.	.5
Basoph.	0	0	0	0	0	×	....	×	....	7	0	0
Per cent.....	0.	0.	0.	0.	0.		0.		.3	.6	0.	0.
Myelocytes	0	0	0	0	0	×	....	×	....	0	0	0
Per cent.....	0.	0.	0.	0.	0.		0.		.3	0.	0.	0.
Count per c.mm.	3600	3900	2600	4200	1800	2100	....	2450	....	1260	500	400

Blood count of patient.

Autopsy Notes.—The autopsy was performed by Dr. Pepper, at the home of the patient in Trenton, N. J., on the afternoon of May 4, 1907, the body having been injected with some preservative fluid containing formalin by the undertaker some hours previously. Body of a well-nourished male, extremely anemic in appearance, and exhibiting a fairly intense jaundiced hue of the skin. Subcutaneous fat a bright lemon color. Muscles of the abdominal wall very pale. Numerous, easily broken down but fairly extensive, pleural adhesions throughout the left pleura; no adhesions in the right side. The heart was large, both auricles being very much dilated; the heart was empty and had been evidently injected with formalin, as the walls of the auricles felt like leather; the right ventricle was dilated. All the valves were normal.

Both lungs showed small subpleural hemorrhages and on section both were riddled with numerous dark-red firm areas, between which the lung tissue was apparently normal and crepitant. The lungs were very dry and these small areas or nodules were undoubtedly hemorrhagic and were so firm that they could be palpated throughout the whole lung. Most of them were about the size of a split pea; a few seemed to have coalesced.

The spleen was normal in size and appearance, on section it

was also normal in appearance. The liver was fairly large, smooth, light in color, and on section showed no macroscopic evidence of necrosis; it appeared slightly fatty, but otherwise perfectly normal. The gall bladder contained a small amount of bile.

The left kidney was large, thick, fairly firm and rounded; there were a number of small subcapsular hemorrhages. The capsule stripped readily, leaving no trace of the hemorrhages on the kidney. Section of the kidney showed a cortex of normal width; there was no congestion. The parenchyma was clouded and granular in appearance. The right kidney showed exactly the same condition and in addition an area of hemorrhage in the parenchyma about a centimeter in length. The pancreas was normal. The right suprarenal was normal. The stomach contained a small amount of dark brown liquid. The mucous membrane was not ulcerated but was merely dotted here and there with a number of small reddish spots. There did not seem to be any break in the continuity of the mucous membrane at these points. The mesenteric lymph glands were normal in size and appearance. The intestines were not opened. The bone marrow from the middle of the shaft of the right tibia was normal in appearance.

Pathologic Diagnosis.—Severe anemia. Jaundice. Numerous small intrapulmonary hemorrhages. Dilatation of the heart. Acute parenchymatous nephritis with subcapsular ecchymoses.

Microscopic Examination of Tissues.—Lungs: Hemorrhagic extravasation into alveoli, congestion and edema. Number of large epithelial cells containing pigment (Hertzfehlerzellen). Kidneys: For most part the epithelium of the tubules presented normal characteristics. In some areas, chiefly in the convoluted tubules the epithelium was granular, the demarcation between cells obscure, and the nuclei invisible. The lumina of a number of these tubules were filled with granular débris; many others were filled with red blood corpuscles, more or less disintegrated. Glomeruli presented no unusual features. Proportion between interstitial and parenchymatous tissue was normal. In small scattered areas were found bodies presenting the characteristics of emboli composed of bacteria, but unattended by any inflammatory reaction. Liver: Some deposit of pigment, probably blood pigment, in the liver cells. (No areas of necrosis.) Suprarenal: Moderate congestion. Pancreas, spleen and bone marrow normal.

HEMIPLEGIA AS A COMPLICATION IN TYPHOID FEVER,

WITH REPORT OF A CASE.*

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Hemiplegia, during the course of typhoid fever, is a rare affection. Certain of the acute infectious fevers, e. g., smallpox, scarlet fever, measles, diphtheria, whooping cough, influenza and pneumonia, are not infrequently complicated by more or less complete unilateral paralysis. This affection is sometimes associated with aphasia. It is usually coincident with some disturbance in cardiac mechanism. It may occur at any stage of the special disease under consideration. The greater number of cases have been found to occur in children—perhaps because the diseases mentioned are most common in the first decade of life. But considering the severity of many of the typhoid infections, and the widespread prevalence of the ailment, is it surprising to note the infrequency of paralysis of any form as a complication, and especially of hemiplegia.

Numerous cases are on record in which paraplegia has complicated the course of the disease. Paralysis of single muscles, as, for example, the external rectus of the eye, or of certain muscle groups, such as the muscles of deglutition or the muscles of the posterior part of the thigh, is rather more common. However, one seldom meets with more than a passing mention of unilateral paralysis. Isolated cases are scattered throughout the voluminous literature of typhoid fever, but systematic tabulation is lacking. In view of the fact that the complication may occur in the course of any given case, and that, when present, it brings up an important point in the prognosis of such a case, it has been thought that a brief review of the subject might be of interest and value.

HISTORICAL.

Gubler, in 1860, first called attention to hemiplegia occurring at the "height of fever" in a young girl, a syphilitic, seven months pregnant. Aphasia was present. A few years later Scoresby Jackson published a careful analysis of a case in his own practice, in which hemiplegia and aphasia had suddenly appeared in the course of typhoid fever. Jackson paid more attention to the speech disturbance than to the paralysis, but nevertheless gives a most fascinating description of the progress of both lesions. Soon after the appearance of Jackson's paper Benedict reported two cases, in both of which there were disturbances in speech. The same year Karmin described hemiplegia without aphasia in the case of a young adult. The paralysis came on as late as the eighth month of a particularly severe attack of typhoid with prolonged convalescence. Studies by Berger and Nothnagel soon followed, the latter considering the subject far more completely than it had been heretofore. Between 1872 and 1889 only four cases appear in the literature that was accessible. Caley mentions hemiplegia during convalescence in a lad of 11, without aphasia; Gee cites its occurrence in a boy of about 7 years, with aphasia, and five years later Sorel reports hemiplegia and aphasia at the nineteenth day in a young adult male. A writer in the Middlesex Hospital Reports of the same year recorded hemiplegia coming on the ninth day, with convulsions and unconsciousness, in a man of 24. In this case also there was aphasia. It was not, however, until Sir Francis Hawkins' address before the London Clinical Society in 1889 that hemiplegia, in the course of typhoid fever, became recognized as a complication which was worthy of serious consideration. Thus far it had been looked on as a curiosity in medicine. Hawkins reported seventeen cases which he had collected from the literature or personally observed. He gave a masterly discussion of the conditions noted and added much of value to the pathology. No further summary of the lesion occurs until that of Osler's in 1899, although several cases had appeared in the literature, and a surprising number of them had been observed at the Johns Hopkins Hospital. Osler added four cases to the growing list, and was fortunate enough to be able to tabulate the postmortem findings in two of the cases reported. Since 1900 about a dozen cases have been mentioned, some with very complete detail, others with most meager observations.

FREQUENCY.

Holscher, summarizing 2,000 fatal cases of typhoid fever at the Pathological Institute in Munich, mentions twenty cases as showing "cerebral apoplexy," but gives no details concerning the locations of the lesions nor the antemortem manifestations. Perusal of the Charite Annalen of Berlin from 1874 to 1903 reveals the surprising fact that of 4,793 cases of typhoid fever, of which 875 were fatal, no cases of hemiplegia occurred.

* From the Clinic of Internal Medicine of Professor Dock.

In an analysis of 1,000 cases of typhoid fever in America Herrick cites no instance. McCrea's tabulation of 707 cases at the Montreal General Hospital includes one case of paralysis of one side of the face and one case of paralysis of the muscles of deglutition, but no mention of hemiplegia. A somewhat careful review of the Guy's Hospital Reports, London, fails to find mention of hemiplegia complicating typhoid fever.

With the case herewith reported, the number of cases of which some details can be given has been increased to more than forty. It is probable that more extensive search may reveal a greater number, but further literature than that recorded was not available. For purposes of reference and convenience of comparison, a tabulation of all the cases reviewed is given, but before considering the reports in detail it is deemed advisable to present a summary of the patient which the writer recently had opportunity of watching.

CASE.

Patient.—A male, aged 36, a farmer, was admitted to Prof. Dock's clinic Sep. 30, 1906, on account of fever of about six days' duration, cough, headache, general weakness and discomfort. He came from a village in which there existed a small epidemic of typhoid fever.

History.—Family history was negative. Patient was puny as a child; had the usual diseases of childhood; made a rather slow recovery from measles, suffered with chronic bronchitis for some time afterwards; contracted syphilis at age of 24; had ulcer on penis, sore mouth, lost some hair, and had a rash. He took no treatment at that time. Patient said that the disease left him with a "feeling of weakness below the knees," that the knees "played out suddenly" and that for some time he had difficulty in walking any great distance. He gradually recovered, but six years later again suffered from "weak feelings" in his legs, but was not disabled. In April 1906, he had a third, similar attack, and had to give up his farm work. He then began specific treatment, and managed to get about again, but did not feel strong enough to work. He gave no history of alcoholism.

Present Illness.—On Sept. 24, 1906, he began to suffer from headache, "flashes of heat and cold," cough, with a little sputum, severe pains in back and top of head, flatulence; thinks that he had fever; called a physician, who sent him to the hospital.

Examination.—On admission at 10 a. m. his temperature was 101.5 F; pulse 110; respiration 36. He was able to walk with slightly spastic gait; he was rational; face flushed; had anxious expression, lips tremulous and slightly cyanotic; tongue very red and moist; extremities cold. His abdomen was moderately distended, the abdominal wall lax, with slight tenderness over both lower quadrants; the spleen extended to the rib margin in left nipple line at the end of deep inspiration. Heart showed slight enlargement to right; all sounds weak; pulse was full, rapid, regular, compressible with no dicrotism. Lungs disclosed harsh breathing over both upper anteriors, with few coarse, mucous râles.

Blood: Red blood cells, 5,560,000; white blood cells, 5,348; hemoglobin, 95 per cent.

Urine: Positive diazo and indican tests.

Progress of Case.—On the second day in hospital, temperature ranged from 100.4 F. to 102. F; pulse 88 to 120; respiration 28 to 32. Patient became delirious and rather violent towards evening. Splenic dulness disappeared. On the following morning, was rational, but stupid. Temperature ranged this day from 99.8 F. to 103.4 F.; pulse 80 to 112; respiration 28 to 36.

Oct. 3.—Widal positive, moderate clumping in 45 minutes with dilution 1:40 (Dr. McMichael). Towards evening the patient became delirious and very restless, and stood his tub-baths, at 65 F., rather poorly.

Oct. 4.—In the afternoon, patient complained of "cramping" of the last two fingers of his left hand, and of pain in his back, head and ankles. He became extremely restless, eyes became staring, arms and legs rigid, had difficulty in swallowing, and lay with his head drawn sharply to the right. Temperature ranged, 99.2 F. to 101.8 F; pulse, 96 to 122; respiration 28 to 42.

Oct. 5.—Slight tremor over entire body, extremities cold, skin mottled and dusky. Heart sounds very weak; reacted poorly to bath at 65 F. Blood pressure: Systolic, 112 mm. Hg; diastolic, 65 mm. Hg. with the Stanton 12 cm. cuff. During the night the patient's head continued to be strongly drawn to the right, there was marked tremor of the jaw and the upper part of trunk; the arms were rigidly flexed at the elbows. Cheyne-Stokes respiration appeared; the patient urinated involuntarily. On account of the tremor the blood pressure variations could not be followed.

Oct. 6.—Condition much the same; tremor slightly less marked. Patient became conscious during the early part of the day. He was unable to protrude his tongue, and his head was noticeably retracted. The heart sounds were weak at the apex, and a soft, blowing systolic bruit could be made out. Later in the day his face became very deeply flushed, violent coarse tremors and twitchings appeared over both upper extremities, especially over the right, the patient became delirious, and Cheyne-Stokes respiration again appeared. Temperature 99.2 F. to 103 F.; pulse 98 to 120; respiration 28 to 44.

Oct. 7.—Tremors more noticeable, especially over the right arm and the right face; ptosis of the left upper eyelid, slight photophobia; tongue could not be protruded; involuntary urination; abdomen slightly distended; heart sounds weak, systolic bruit at apex still present. Temperature 98.2 F. to 100.4 F.; pulse, 88 to 116; respiration, 28 to 40. Blood pressure: Systolic, 112 mm.; diastolic, 75 mm., with the Erlanger 12 cm. cuff.

Oct. 8.—(Nine days after the patient entered the hospital, and about fifteen days after the beginning of his illness.) Patient lay with head drawn to the left; left angle of mouth drawn down; left arm flexed rigidly at right angles across thorax; very coarse tremor over both upper extremities, especially the right. Legs could not be freely extended on the thigh, when thigh was flexed on trunk; tongue deviated to the left; involuntary urination. Patient in stupor greater part of day. Blood pressure: Systolic, 102 mm.

Oct. 12.—Patient rational, but dull; pulse very soft and irregular; moderate dilatation of the left heart. Blood pressure: Systolic, 99 mm.; diastolic, 60 mm., with the Erlanger 12 cm. cuff.

Oct. 11.—Distinct ptosis of the left upper eyelid; moderate deviation of left eyeball to left; pronounced lowering of the left angle of the mouth; marked leftward deviation of the tongue; difficulty in swallowing; flattening of the left nasolabial fold. There was slight rigidity of the left forearm, but a fair degree of motion on the right. The patient was unable to open his left hand, and only partly could extend his left forearm, slowly dragging it along the bedclothes. Patient could not elevate the left arm from the bed; there was no grip in the left hand; there was moderate movement on the right with fair grip. The legs were slightly flexed, the right moved slowly, the left could not be moved. There was marked sensitiveness to stimulation of the skin, with marked spasm of the leg and thigh muscles on such stimulation. Sensation otherwise was negative. There was slight Babinski's sign on the left; ankle clonus on both sides, especially on the left; patellar reflex was reduced on both sides. The patient complained of severe pains in the muscles of both legs. Temperature 96.6 F. to 102.2 F.; pulse 80 to 96; respiration 20.

Oct. 12.—*Laryngoscopic examination.* (Prof. Canfield) Right side negative; partial paralysis of the left vocal cord; throat negative. Deep reflexes (Dr. Klingmann) showed no change in character, but a general diminution in response on the left, with increase on the right; no reaction of degeneration.

Oct. 13.— Patient felt much better; could move right arm and leg freely; there was little motion on the left side, but the rigidity had almost disappeared. Eyes, mouth and tongue as before. There was still difficulty in swallowing; patient urinated involuntarily; slight Babinski's sign still present on the left; pronounced left wrist-drop, with flexion of the fingers of the left hand. From this time on the patient passed through

a rather eventful convalescence, the main events of which are summarized in the following notes:

Convalescence.—Oct. 16—Intense muscular tenderness in both legs and arm, especially the left; moderate but painful swelling of the glands in the left axilla. Oct. 20: Marked cardiac irregularity, with pronounced extra systole and loud systolic murmur at apex and in axilla. (Patient had been taking digitalis for dilated heart.) Babinski's sign disappeared on the left. Oct. 25: Moderately severe phlebitis in the left femoral. Nov. 1: Patient complained of severe general headache. Put on potassium iodid. Nov. 6: Right arm and leg practically normal; patient sat up in bed for a few minutes. Nov. 16: Moderately severe daeryocystitis on the left. Nov. 23: External strabismus of the left eye had disappeared; no deviation of tongue; patient could control his urine. Dec. 12: Patient walked with assistance: dragged left foot at toe, and swung left leg from trunk when walking; could not raise left leg over right knee. Dec. 16: Moderate edema of left leg and left hand. Patient had been moving about rather freely. Jan. 5, 1907: Patient was feeling fairly well, and was gaining in both weight and strength. Jan. 7: (Prof. Dock) Patient looked thin; lips and ears were red; vesiculo-papular eruption on forehead (potassium iodid?) walked fairly well; left arm very weak; tongue pushed slightly to the left. Jan. 25: The patient was about to be discharged; looked fairly well; was within about ten pounds of his normal weight, and could walk about twenty rods without feeling fatigued. Had difficulty in climbing stairs. Still slight ptosis in the left upper eyelid; pupils negative; could pucker lips so as to whistle, but could not whistle a tune; had slight tremor of both lips; the tongue was fuller on the right and deviated slightly to the left. The right hand and arm showed no disability. The left arm hung loosely at the patient's side; the left hand was puffy and cooler than the right; the arm was slightly flexed at the elbow and the fingers were flexed into the palm. The patient could approximate his fingers to his lips, and could raise his arm laterally about one-third of the distance to the shoulder-level and about half way, anteriorly. He could extend to about an angle of 160 degrees at the elbow. Flexion, without assistance, was very limited. He could extend fingers to about an angle of 170 on the hand, but distal phalanges were only capable of slight extension; flexion of fingers was fairly complete, with moderate grip. He could hold a full cup in his fingers. In walking, the patient swung his left leg stiffly from the trunk and shuffled his left foot slightly. He could move his toes, but there was a moderate degree of stiffness at the left ankle joint. Patient could cross his left leg over his right knee with little difficulty. There were no disturbances of sensation. He had no difficulty in swallowing. The jaw reflexes were increased, as were also the elbow and patellar deep reflexes; no ankle clonus; no reaction of degeneration.

Subsequent History.—The patient returned to the hospital for re-examination about the middle of February, 1907. He had gained considerably in weight and had steadily improved in strength. Movement of the left side was in every way freer, more definite and firmer. The patient had been on potassium iodid since leaving the hospital, with massage and faradism. Headaches were rare; mentally he seemed much brighter. He was advised to continue his medication, to get massage and passive motion when possible.

LESION.

The somewhat gradual onset of the hemiplegia, with the succeeding progressive recovery from the condition, points strongly to a thrombotic process in one of the cerebral arteries or its branches or both. The artery involved was doubtless the right middle cerebral, with its off-shoots to the various motor centers. The early disability of the right side may be explained by temporary disturbance in the circulation in the left middle cerebral or its branches. However, it is not impossible that extension of the thrombosis on the right side could have resulted in material interference with the flow of blood in the circle of Willis, and, as a consequence, the free passage of blood to the left motor area was retarded. The absence of any definite cardiac lesion, and the relatively slow onset of the paralysis, together with the extent of that established, are reasonably strong evidence against the process being primarily embolic. The large extent of the motor cortex simultaneously involved, and gradually rendered functionless, argue against hemorrhage as being the chief cause of the trouble. However, it is impossible to say that there was not slight hemorrhage, with early thrombosis following. The history of syphilis in this patient gives a significant hint as to the underlying pathologic alterations in the cerebral arteries, which rendered interference with the circulation possible—in fact, it is a question as to just how much the patient would have suffered had he not been luetic.

THE TABLE IN SUMMARY.

In the table herewith presented I am able to furnish information concerning forty cases of hemiplegia in typhoid fever. There are several cases mentioned to which I have not had access, and so am unable to properly complete the list. In addition to the cases herewith tabulated, I have to mention cases reported by Courtade,[1] Cohin[2] and Moore.[3] I regret that I have not been able to consult the literature for these cases. The interesting features of the summary will be considered in detail.

Sex.—Of the thirty-three cases in which the sex is mentioned, twenty-three are males, nine are females; in two instances the sex is not recorded.

Age.—Four cases were 5 years or under, five cases were between 5 and 10 years, eight cases between 10 and 20, thirteen cases between 20 and 30, and two cases were more than 30 years of age. In the remaining cases the ages were not stated. It is readily seen that the lesion is more common in young adults, and this is explained, doubtless, by the greater prevalence of typhoid fever at that period of life.

Associated Conditions.—Syphilis is mentioned in two cases, including the one reported in this paper. Pregnancy complicated in one; in another there was purpura. Several cases were accompanied by hemorrhage from the bowels. Cardiac lesions were not frequent. It seems that in few instances were any lesions other than those of the febrile state present. In the case herewith presented at times there were present a softly blowing systolic bruit at the apex, which became more marked under digitalis medication. There was considerable irregularity in rhythm, with marked dicrotism, but there was no persistence of cardiac dilatation or incompetence.

Aphasia.—In thirty-two cases in which disturbances in speech were recorded aphasia occurred in twenty-six; it was absent in four cases, and in the remainder of the cases there was unconsciousness, with later faltering speech or death before the presence or absence of aphasia could be determined. In the case given here the patient did not answer well for several days. He appeared to understand questions, but responses were very tardy.

Time of Onset.—This varied widely. It is not reported in all of the cases. In thirty cases in which some details are given, in but one case did the hemiplegia occur during the first week of the disease. Eight instances are recorded as occurring during the second week, eight during the third week, two during the

1. Encephale, Paris, 1886, 431.
2. Bull. general. de Therap., Paris, 1887, 397.
3. Trans. Royal Acad. Med., Dublin, 1900, xvii, 492.

TABULATION OF CASES OF HEMIPLEGIA COMPLICATING TYPHOID FEVER.

No.	Reported by	Sex and Age.	Occurrence.	Symptoms of Onset.	Aphasia.	Side.	Result.
1	Gubler: Arch. gen. de Med. 1850.	F., 19..	"Height of fever."	Syphilis; pregnant; seventh month.	Present.....	R..	Recovery.
2	Jackson: Edinburgh Med. Jour., 1857.	M., 21..	Eighteenth day...	.....	Present.....	R..	Recovery almost complete.
3	Benedict: Electrotherapie, 1868.	?	?	?	Present.....	R..	?
4	Karmin: Wiener Med. Press, 1868.	M., 24..	Between eighth and ninth month of prolonged and severe case.	.....	No cerebral disturbance.	L..	Persisted.
5	Benedict: Electrotherapie, 1868.	?	?	Atrophy of optic nerve.....	Speech faltering.....	L..	?
6	Berger: Berlin klin. Woch schr., 1870.	M., 21..	Third week.....	Unconscious.....	?	L..	Persisted.
7	Nothnagel: Dent. Arch. f. klin. Med., 1872.	M.....	During febrile state.	Convulsions.....	.....	R..	?
8	Eulenberg: Quoted by Nothnagel.	?	?	?	Present.....	R..	Recovery.
9	Same.....	?	?	?	Present.....	R..	Recovery.
10	Caley: Med Times and Gaz., 1878.	M., 11..	During convalescence.	.....	Not affect speech.....	R..	Recovery.
11	Gee: Med. Times and Gaz., 1878.	M., 7-8.	During convalescence.	.....	Present.....	R..	Recovery.
12	Sorel: L'Union Med., 1883..	M., 24..	Nineteenth day...	.....	Present.....	R..	Persistent one year after.
13	Hawkins: Clin. Soc. Trans., 1889.	F., 18..	Twenty-ninth day.	Hemorrhage from bowels; purpura.	Present.....	R..	Died. Clot in right middle cerebral artery and in left auricle.
14	Middlesex Hosp. Rep., 1883.	M., 24..	Ninth day	Convulsions; unconscious..	Present.....	L..	Recovery.
15	Newbolt: Lancet, Aug. 27, 1892.	M., 21..	Forty-first day....	Hemorrhage from bowels..	Present.....	L..	Recovery.
16	Strümpell: Lehrbuch.....	F., 10..	"Fourth fever-free day."	Convulsions; severe attack.	Present.....	R. ?	Recovery in fifteen weeks.
17	Same.....	M., 15..	Third week.....	.....	Present.....	R. ?	Recovery in ten weeks.
18	Kummell: Ztschr. f. klin. Med., ii, 2.	M., 30..	.....	Severe attack; much meteorism.	.....	....	?
19	Curshman: Nothnagel's Syst. Med.	F., 19..	Third week.....	Moderately severe atttack..	Present.....	R. ?	?
20	Haynes: Johns Hopkins Hosp. Bul., 1895.	M.....	Twelfth day.....	Delirium.....	.....	R..	Recovery partial.
21	Blumer: (Same).....	M., child.	Seventeenth week after typhoid.	Violent, sudden, convulsions.	Present.....	R..	Recovery partial.
22	Thayer: (Same).....	M., 21..	Tenth day.....	Stupor.....	Present.....	R..	Recovery partial.
23	Thayer: (Same).....	F., 10..	Nineteenth day...	Typhoid state; involuntary passage of feces and urine.	Seemed to understand but did not answer.	R..	Much improved.
24	Rolleston: Brit. Med. Jour., 1898.	M., 30..	Twenty-fourth day.	No convulsions.....	Present.....	L..	Gradual recovery.
25	Herringham: (Same).....	F., 9...	Third week..	.....	.....	R..	?
26	Emerson: Johns Hopkins Hosp. Rec., 1899-1900.	M., 45..	Eighth day.....	Headache; diplopia.....	.....	L..	Gradual improvement.
27	Osler: Johns Hopkins Hosp. Rep., 1899-1900.	M., 22..	Fifth day	Sudden, uneasy feeling in head; general, clonic convulsions, beginning in both arms simultaneously.	Unconscious.....	L..	Died. Hemorrhagic enteritis of ileum; ulcers in Peyer's patches; thrombosis in ascending parieto-temporal artery, including points of origin in mid-cerebral, also recent thrombosis in branches running into Rolandic fissure.
28	Osler: (Same).....	F., 7...	Tenth week.....	Fever; sudden convulsions.	Present.....	R..	Partial recovery; both lesions.
29	Osler: (Same.....	M., 25..	End second week.	Delirium; no convulsions..	Not present.....	L..	Partial recovery.
30	Osler: (Same).....	M., 46..	Third week.....	Cheyne-Stokes respiration; cardiac arrhythmia; nausea.	Not present.	L..	Died. Ordinary intestinal lesions of typhoid fever, softening of upper part of right internal capsule and thrombosis of artery.
31	Ellis: N. Y. Med. Rec., Oct. 1, 1892.	Young lad.	.....	Symptoms pointing to poliomyelitis.	.....	....	Complete recovery.
32	Diller: N. Y. Med. Rec., 1903.	M., 5...	Three and one-half weeks.	Moderate fever; much tympany.	Present.....	R..	Recovery partial.
33	Dankin: Lancet, Apr. 23, 1892.	F., 30..	Thirtieth day.....	Pains in head.....	Present.....	R..	Died. Clot in middle cerebral artery; heart dilated.
34	Hrach: Wien. Med. Wochschr., No. 42, 1902.	M., 23..	Fourteenth day...	Moderately severe attack; convulsions; facial paralysis first three days then hemiplegia.	Present.....	R..	Improvement of both lesions; contractures of right hand.
35	Barrett: Mich. State Asylums for Insane.	F., 5...	During second week.	Moderately severe attack.	Not present.....	R..	Epileptic attacks followed: contractures, with marked shortening of right arm and leg; athetoid movements; patient died at age of 17 of pulmonary tuberculosis. Postmortem examination of brain showed early thrombosis of second branch of Sylvian artery, atrophy of entire motor tract and replacement of parenchyma with dense scar tissue.
36	McCaskey: Studies	Child, 5	.....	Severe attack..... ...	Present.....	?	Fatal.
37	Stevens: Glasgow Med. Jour., 1897.	.....	.....	Severe attack; onset gradual.	.....	....	
38	Dantsig: Ejened. Jour. Prakt. Med., St. Petersb., 1898.	.....	.....	.....	Present.....	R. ?	
39	Stein: Pest. Med. Chir. Pres., Budapest, 1901.	.....	.....	.....	?	?	?
40	Baylac: Toulouse Médicale 1904.	.....	.....	Convulsions.....	Jacksonian type.....	R..	
41	Tessier: Progrès Médical, 1885, -440.	.....	.....	.....	Present.....	....	
42	Sakorrhaphos: Ἰατρικὸς μηνῦτωρ Ἀθῆναι, 1903, iii, 75.	.....	.....	.....	?	R..	
43	Smithies.....	M., 33..	Seventh day.....	Convulsions, delirium; stupor; Cheyne-Stokes respiration; moderate temperature.	Did not answer well for two days; seemed to understand.	L..	Gradual improvement contractures hand and leg; muscular atrophy.

fourth, and the remainder during convalescence; in one case as late as the eighth month of a particularly severe attack with prolonged recovery period.

Mode of Onset.—In ten cases the hemiplegia was preceded by convulsions. In four instances these came on suddenly and violently. With the convulsions there was usually associated unconsciousness, either temporary or long continued. In four instances there was delirium—in the case here given it was quite violent at first. In three cases there was stupor. Several instances of very severe headache preceding the onset of paralysis are recorded. Hemorrhage from the bowel was noted in one instance, and in another there was choked disc. In the majority of the cases the height to which the fever rose is not mentioned. In a few instances there was very high temperature, with low muttering delirium and subsultus tendinum. In the case given there was but moderate rise in temperature.

The Side Affected.—This is definitely mentioned in thirty-five of the reported cases here tabulated. In twenty-one instances the paralysis was on the right side; in ten cases it was on the left side. In the remaining cases the side is not definitely mentioned. In only two cases of right-sided paralysis was aphasia absent. In three of the left-sided paralyses aphasia was present.

Postmortem Findings.—In Dankin's case there was a clot in the left middle cerebral artery. The heart was dilated and there was a hemorrhagic infarct in the lower lobe of the left lung. In Hawkins' case there was a clot in the left middle cerebral artery and thrombosis of the right auricle. Two of Osler's cases were fatal. One exhibited hemorrhagic enteritis and ulcerated Peyer's patches as the primary typhoid lesion. Section of the brain revealed thrombosis of the ascending parietal branch and the parieto-temporal branch of the middle cerebral artery, including their points of origin. There was also recent thrombosis of the branches running into the Rolandic fissure, the sulcus between the frontal gyri and the ascending frontal convolutions and the branches supplying the temporo-parietal region generally. The other case reported by Osler showed ordinary typhoid lesions in the bowel. In addition there was softening in the upper part of the right internal capsule. The area was about the size of a hickory-nut and lay lateral from the caudate nucleus and a little median and slightly dorsal from the upper border of the cortex of the island of Reil. Barrett's case died twelve years after the onset of the hemiplegia, from pulmonary tuberculosis. The autopsy showed evidence of early thrombosis of the second branch of the left Sylvian artery, with atrophy of the entire motor area. The cerebral parenchyma was replaced by scar tissue. In the remaining fatal cases the postmortem findings were not recorded.

Results.—In six of the cases the patients died. Twelve recovered completely. The shortest time to complete recovery was about twelve weeks. In the great majority of the remaining cases there was usually gradual improvement of the paralysis. This was especially so as far as the gross movements of the parts involved were concerned. The finer movements requiring delicate coordination were, in most instances, late in returning, or were lost completely. In three instances the hemiplegia persisted with no improvement. Recovery from the paralysis was generally noted as being more rapid and more complete in the lower limbs, with the muscles of the feet and legs regaining their functions earlier than those in the arms and the hands. Muscular weakness, more marked than that usually noted in post typhoid states, was frequently commented on. In many cases there was moderate atrophy of the parts involved. This usually was more apparent in the muscles of the hands, arms, shoulder girdle and legs. Facial hemiatrophy was occasionally observed. Contractures, both early and late, were commonly present, even with the most careful therapeutic measures adopted to prevent such. In Barrett's case there was shortening amounting to several inches of the right arm and the right leg, associated with athetoid movements. The contractures led to complete disablement. This case was also complicated with epileptiform attacks. In the patient, whose progress furnishes the basis of this paper, after six months' time the man was still greatly incapacitated. There was slight shortening of the left leg, with spastic paralysis of the posterior leg muscles, and partly of the posterior thigh muscles, contractures of the flexors of the left hand and paralysis of the anterior forearm muscles and the left trapezius. Co-ordination in the movements of both arm and leg was imperfect. Slight ptosis persisted in the left upper eyelid, the left face muscles were sluggish and incomplete in their action.

In the patients in whom the hemiplegia was associated with aphasia the recovery from the latter disturbance was much slower and less complete than from the former lesion. In some cases there was but slight improvement in the aphasia. In others only after persistent teaching efforts and various exercises did the patients succeed in speaking. In but few of the patients was there complete recovery. It might be said, indeed, that in no instance was the speech so perfect as before the illness.

In the non-fatal cases loss of bladder control has been but temporary. Involvement of the muscles of deglutition has not been permanent. Sensation has usually been but little interfered with. In the case here reported there was not the slightest sensory disturbance at any time, except the rather painful neuritis of the early period. Athetoid movements on attempted voluntary movement have been reported by both Osler and Barrett.

The mentality seems to suffer no serious alteration. The delirium of the early stages of the paralysis has not been observed to have very lasting effects. In a few patients, even without aphasia complicating, slow cerebration has persisted for some time after the febrile state. Confusion and hesitancy of speech is fairly common, persisting for some months, as in the case of the patient recently under our care. There seems to be, in some instances, more than the ordinary tendency toward post typhoid neuroses, particularly of the psychic nature. But this is not to be wondered at in view of the serious nature of the disability. For a man who has been previously well and active to suddenly find himself a helpless cripple, with but a prospect of partial alleviation at the best, is certainly sufficient ground for pessimism, if not actual melancholia.

Causes of the Hemiplegia.—In two instances syphilis doubtless predisposed. In the fatal cases coming to autopsy thrombosis has been the rule. This has occurred, irrespective of whether or not the lesion has appeared, as Hawkins suggests, early or late in the course of the typhoid fever. Whether or not the damage was done as a result of an early cardiac involvement can not be stated, inasmuch as observations on the heart condition are lacking in the majority of the reported cases.

In hemiplegia complicating other acute febrile diseases, cases are on record in which the cardiac valve-flaps have been found to be normal, and yet clots have been found in the heart and thrombi in the arteries. Hawkins cites Henoch as mentioning an instance in which embolus was found in the right Sylvian artery and a thrombus on the left side of the heart. In many cases dicrotic pulse and cardiac irregularity were marked, especially in those reported by Hawkins, Osler and that here given. When the lesion comes on early in the course of the fever, with sudden, severe convulsions and loss of consciousness, the evidence appears to be that the causative factor is either an embolus or a small hemorrhage involving the motor areas of the cerebrum. When the condition is a complication of the later stages of the disease the damage is doubtless due to thrombosis, although one can not eliminate the possibility of a hemorrhage occurring as a result of sudden strain on the arterial walls. The recent studies of Thayer on the blood-vascular changes in typhoid fever might lend strength to the opinion that there are some cases in which thromboses may develop without much coincident cardiac weakness. The possibility of the injurious effects on the circulation from a diffuse encephalitis must not be overlooked.

Prognosis.—Death occurred in about 15 per cent. of the cases in which hemiplegia complicated. In these cases the lesions in the bowel did not appear to have been the most serious factor in causing the fatal termination. In the non-fatal cases the prognosis is for gradual partial recovery. When the lesion is associated with aphasia the recovery is apt to be less rapid and less complete. The aphasia is apt to persist. However, this rule does not apply in all cases. In about 8 per cent. of the cases there was no improvement.

Treatment.—This naturally falls into (a) treatment during the onset of the paralysis, (b) treatment of the condition after hemiplegia has been established, and (c) treatment of the primary infection.

DURING ONSET OF PARALYSIS.

Measures whereby cerebral congestion is relieved are indicated. Ice-bags may be applied continuously to the head. They are of great service in controlling the delirium, and certainly, in my experience, exert a favorable influence on the convulsions when present. Doubtless they are of value in preventing the diffuse cerebritis, as suggested by Sir Thomas Barlow. The Brand bath should be discontinued during the convulsive stage, but in the absence of convulsions with simple delirium the cold tubs, with constant pouring of cool water on the head, do much to relieve the mental symptoms. Frequently by this treatment the onset of severe convulsions may be prevented. In those cases in which cerebral congestion is extreme, as shown by the swollen vessels, the purple face, the wandering mind, the high temperature and the dilated heart, venesection—if quickly done—is of undoubted service. In the cases with less evidence of cerebral congestion, and with slow onset of the paralysis, blood-letting is contraindicated, as predisposing, by retarding the circulation, to increased thrombosis. Local blood-letting, as by the application of leeches over the mastoid area, as suggested by Berger, may be tried and may be of some value in selected cases.

The action of brisk purges, as the use of salines or a few drops of croton oil, may be of advantage in the cases in which the paralysis comes on early, but would, of course, be out of place in the later stages of the disease when ulceration of the bowel has taken place. Warm bags to the feet or mustard cloths to the legs may be serviceable in some instances. For the cardiac weakness digitalis and strychnin may be necessary, although on account of their action on the blood pressure they should be used with caution. Aconite is of value in cases with high pressure and rapid heart. In many instances the constant application of an ice-bag over the precordia will do much to prevent sudden dilatation and to control such when once present. The convulsions seldom require chloroform. It should be given cautiously. Bromids in large dosage, in the early stages, may be useful for controlling spasm and convulsions, and are quite harmless if cautiously given. For the intense headache nothing is so grateful to the patient, or so harmless in its action, as the ice-bag or frequent sponging with cold water. An occasional dose of acetphenetidin is sometimes of value, but on account of its depressing effect its use should not be persisted in.

Surgical interference may be of value to relieve pressure or remove clots or thrombi in cases where an operator of the highest skill is available.

AFTER HEMIPLEGIA IS ESTABLISHED.

When the hemiplegia has been established supportive measures are indicated. In the early stage the patient may have to be frequently catheterized on account of the loss of sphincteric action. He may have to be fed through a tube or by the rectum, the latter procedure being inadvisable except in the very early cases or those coming on during late convalescence. It is to be remembered that an ordinary patient will go several days without much nourishment, and with little harm to himself, provided sufficient liquid is furnished in the form of water. Burns from hot water bags and the resulting bed sores should be carefully avoided or, if present, should be kept scrupulously clean, protected and dusted. In those cases which come on late, or after the acute infection has subsided, the indications are to prevent atrophy and contracture. Massage with warm olive oil several times daily is of much value, but must not be too vigorous, inasmuch as it occasionally is largely instrumental in the production of muscle tenderness and phlebitis. It should always be from the periphery. Passive movements of all the involved joints should be performed, gently at first and not over too long a period. In this way contractures and ankylosis are largely prevented. Faradism is often of value in promoting nerve and muscle nutrition.

Careful feeding, outdoor life and frequent bathing will do much to restore function. In those cases in which syphilis is present or suspected, full doses of the iodids are indicated. For the obstinate edemas, which frequently occur in the dependent parts, e. g., as in the hand, rest, with elevation, is indicated. If such a condition persists elastic web bandages, not too strong, may be worn when the patient is in the upright position. The patient should be encouraged to make voluntary movements as often as possible, and should be told the importance of attempting the finer movements of coordination. Exercises calling for such movements are readily invented, and frequently the patient performs them with enthusiasm. When aphasia is present exercises for phonation, for recognition and description by writing or by speech should be arranged.

TREATMENT OF THE PRIMARY INFECTION.

The carrying out of the measures for the relief of the symptoms associated with onset of hemiplegia, and for its treatment after once established, do not inter-

fere with the routine treatment of the acute infection. The cold tubs may have to be suspended for a time, the patient will require more care during convalescence, which may be long drawn out, and the prolonged stay in bed may render him more liable to complications, but by taking care of such as they arise one can usually control the situation.

I wish to acknowledge my sincere thanks to Prof. Dock, Prof. Canfield, Dr. Klingmann and Dr. Freund for aid in the examination of the patient herewith presented and for suggestions in the collecting of data.[4]

THE TREATMENT OF PSEUDARTHROSIS AND RETARDED CALLUS FORMATION BY INJECTION OF BLOOD.*

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It is now more than two years since Professor Bier reported his first experience in treating pseudarthrosis and retarded callus formation in a new and interesting way. It comprises the injection of venous human blood between the fragments, which blood is taken from the arm of the patient or from that of another healthy man, in order that callus formation may be stimulated.

As the manner in which this injection excites the formation of callus is not perfectly clear, I will make a few explanatory remarks regarding it. In every case in which there is a fresh extravasation of blood one sees the signs and symptoms of a slight inflammation. The affected part is painful, edematous, and many times the patient has fever and a feeling of heat in the part, at times also the patient has albuminuria.

These phenomena, which are but the manifestations of the reaction of the body to the extravasation of blood, seldom fail, and are especially marked when, instead of the patient's own blood, the blood of another person is injected. The most intense reaction is called forth by injection of the blood of animals.

These immediate symptoms of absorption are followed by others, which are active for a long time. Hard, new connective tissue is formed in which blood pigment may be deposited, and often more highly organized tissue is destroyed by these scars which follow such extravasations, for instance, in joints, muscles and in the central nervous system.

The inflammatory irritation produced by such extravations can be easily demonstrated in simple fractures. There is intense pain, marked swelling and increased amount of heat in the part. Bier believes that in these cases the inflammatory reaction is due to the extravasation of blood, and that the formation of callus is caused by this inflammatory reaction.

The fact that cases which often heal with the formation of a large amount of callus are those cases in which a large extravasation has occurred seems to point to the above-mentioned logical conclusion. On the other hand, we often see delayed callus formation in compound fractures on account of the escape of the blood. Further, in hemorrhages near bones we see at times a thickening of the periosteum; also in cases of repeated traumatic hemorrhages we see the formation of osseous nodules in the muscle substance. In the same manner the intentional irritation of the fractured ends of bones and the pounding on the site of the fracture, as practiced by Thomas, excited callus formation, not by the direct irritation, but by irritation excited by the hemorrhage which this treatment caused. These various considerations prompted Bier in his efforts to induce callus formation by injection of blood, and these injections have proven the truthfulness of his suppositions.

One can divide the pseudarthrosis into two classes, the one due to inefficient treatment (marked dislocation of the fragments), the other due to a general condition of the patient which is not favorable to the formation of callus. In the latter class there are many conditions which I will not enumerate. All surgeons have seen cases in which the fractured ends have been perfectly reduced and the best treatment followed, and yet no callus formation takes place. In such cases all treatment is in vain, even suture of the bones, which in these days of aseptic technic is the best, but is not always to be recommended.

On account of better technic in the treatment of fractures we see to-day comparatively few cases of pseudarthrosis as compared with former times. With the help of the skiagraph we are able so perfectly to reduce a fracture that pseudarthrosis from malposition of the fragments is very rare, indeed. Therefore, we may place almost all cases of pseudarthrosis in the second group, in which the system, from some known or unknown reason, has lost its ability to form callus.

The injection of blood in these cases is similar in its action to the injection of other irritating agents (tincture of iodine and oil of turpentine), the purpose of which was the same, namely, stimulation of the fractured ends to callus formation. The injection of blood is much better, because it is free from danger, it causes less pain, and is similar to the natural irritation, which results in union by callus.

In Bier's clinic, where this treatment is carried out, the technic is as follows: The site of the "false joint," as well as the arm from which the blood is to be taken, are rendered aseptic. By light application of a constricting band the veins of the skin are made prominent, then one of the largest vessels is punctured and 30 or 40 c.c. of blood are slowly drawn into the syringe. If any difficulties are encountered in puncturing the vein, the operation may be facilitated by a small skin incision. The syringe must be large and its needle sufficiently strong in order that the blood may be readily forced through it. Above all, the syringe must be very strong, since much force is necessary to inject the blood into the hard scar tissue.

It is desirable to inject the blood into the space between the fractured ends of the bone, and one may be assisted very much by a skiagram. Not only must one inject the blood between the fractured ends, but also around them into the places, where, from periosteal and paraosteal connective tissue, callus formation shall take place.

It is important that one should immediately inject the blood after its removal, using the same syringe into which it is drawn, in order that it does not coagulate in the syringe. The venous blood does not coagulate as rapidly as arterial blood.

Before using the syringe it should be proven to be in perfect order, normal salt solution being used for that purpose, as it tends to prevent coagulation in the syringe.

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4. There is a bibliography, omitted from THE JOURNAL, which appears in the author's reprints.

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

By immediately injecting the blood, which retains its fibrin, better results are obtained than by injecting blood which is defibrinated.

By this technic I have made a great many injections and have never observed any unpleasant or dangerous symptoms arising therefrom. I have often injected blood taken from another healthy man and have found it to be more effective.

From 20 c.c. to 40 c.c. of blood, according to the size of the bones, is injected, the operation being repeated every 10 days. In most cases there is a visible reaction and after the subsidence of this inflammatory reaction a tumor remains which becomes the callus. Often one or two injections suffice, at times six or more are necessary. The more recent the fracture the more quickly is the result obtained. Therefore, the best results are obtained in cases of delayed callus formation. In cases of long-standing pesudarthrosis this treatment fails entirely at times. But who will claim any one method or treatment as a panacea?

He who has mastered the simple technic of this treatment has at his command a potent prophylactic and by its use as such can prevent such an unfavorable result as a pseudarthrosis.

The results are as follows: In all 21 cases were treated—9 cases of genuine pseudarthrosis and 12 cases of retarded callus formation. Of the 9 cases of long-standing pseudarthrosis, 4 patients were healed with the help of from 1 to 6 injections, 2 remained unimproved, and 3 are still under treatment.

Of the 12 cases of retarded callus, 10 patients were healed with the help of from 1 to 4 injections, 1 remained unimproved, and 1 can not be well used for our purpose because of the bones having been sutured.

In conclusion, let me say that we have been convinced by this experience that Bier's views are correct. *The extravasation of blood is the natural irritant which excites callus formation.* The technic is simple and harmless. We have made over 50 injections and have not experienced a single infection or suppuration.

I recommend this method, and I hope you will be able to substantiate our results. Especially do I urge you to try it before resorting to operation, and I should be very glad to hear of your results with it.

THE TREATMENT OF HYPERTROPHIC AND INTUMESCENT RHINITIS WITH THE GALVANOCAUTERY.*

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In this paper we have considered the treatment of these two conditions together for the reason that most authors consider them as but two phases of a single disease and also because in the majority of cases the treatment adapted to the hypertrophic form of the disease is precisely the one that would be most efficient in the condition attended by repeated but temporary swelling of the parts. In the latter condition the swelling may entirely subside under the influence of cocain or adrenalin applied locally, whereas in true hypertrophy only a part of the swelling disappears under like measures.

In selecting this very old and threadbare subject, we are influenced by the conviction that the hue and cry raised against what we consider the safest and best form of treatment is largely the echo from those inexperienced in the proper technic or misguided by injudicious instructors.

The objections of careful and conservative men to certain methods are not infrequently founded on their observation of the results obtained with those methods by incompetent or bungling operators. That much of the work done by so-called laryngologists is not perfect is undoubtedly true and that some of it is utterly inefficient is altogether probable.

Our impressions, even though founded on long and careful experience, are often at variance with facts; therefore, scientific men demand proof before they will accept any theory, however plausible.

CASES STUDIED.

In preparing this paper we have carefully analyzed 100 private records of consecutive cases in which treatment had been continued long enough to allow us to expect appreciable results.

In order that the histories should be complete we began with a patient first seen in March, 1901. We then selected records following this, but excluded from consideration the records of all who had not received at least one treatment of each naris or two treatments of one naris. Many of those excluded were of slight degree and were seen but once. Of these many were from a distance, so that they could not return; some were cured by the single operation and the others, for reasons that we could not discover, did not continue treatment. It did not seem to use practicable to complete many of these histories by correspondence; therefore, we have relied entirely on the memoranda made at the various consultations.

Although these 100 cases constitute only a small part of those of which we have like records, we have so thoroughly eliminated any chance of selection that the results seem to us to be almost as valuable as though we had analyzed thousands. In analyzing these records, we first decided on the points we wished to consider and then carefully tabulated the findings in each case and we are recording the results without reference to any preconceived ideas. We searched these records first for the most common symptoms complained of by patients suffering with these affections, with the following results:

Hawking and clearing of the nasopharynx were complained of in 13 per cent., which was very much less than we had anticipated.

Stuffing up of the nose was complained of in 69 per cent.

Sore throat, throat irritation, hoarseness in 57 per cent.

Susceptibility to frequent colds in the head was recorded in 17 per cent.

The ears were more or less affected in 20 per cent.

The sense of smell was somewhat impaired in 10 per cent.

Mouth breathing and headache were each noted in 10 per cent.

Excessive discharge from the nose was complained of in 11 per cent.

Excessive sneezing occurred in 5 per cent.

Pain, dryness of nares, cough and interference with speech were among the other symptoms noted.

Our experience has led us to believe that as soon as the nares had been permanently freed from the obstruction the first of these symptoms would be diminished about 80 per cent.; that the second would be entirely cured; the third greatly relieved, and the fourth at least four-

* Read in the Section on Laryngology and Otology of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

fifths removed. The results of treatment have usually been attained by from two to four cauterizations and with only six to twelve visits all told by the patient to the office. In most of these cases (indeed, in all of them having no other trouble) as soon as the symptoms were relieved to the extent indicated above the patients were advised to discontinue active treatment, but generally they were directed to use some slightly stimulating oily spray for a few weeks, in the belief that practically all annoying symptoms would disappear in that time.

In this analysis we have been obliged to classify as improved, only, many cases in which for reasons that do not appear in the records the treatment was not completed, and certainly in some of those classified as not improved the treatment had been discontinued before the work had been completed. We have long believed that over 95 per cent. of all cases of uncomplicated hypertrophic and intumescent rhinitis can be cured if treatment along the lines we have employed be carried to its legitimate conclusion, but we always advise patients to discontinue treatment as soon as the nares appear sufficiently free, because it is easy to enlarge the cavities further if after a time it should seem desirable, whereas we have no remedy if we carry the treatment too far. It thus happens that some patients return for a little more treatment after a few months or years. Our policy has been to obtain the greatest possible benefit with the least discomfort and inconvenience for the patient, at a minimum expense and in the shortest practicable time. With this policy clearly in view, the great majority of operations have been made on the inferior turbinated bodies, a limited number on the septum and comparatively few on the middle turbinated bodies.

DISCUSSION OF METHODS.

The means commonly adopted for reducing the hypertrophied or swollen tissues in the nares are:

a. Aqueous washes.
b. Sprays of various substances in water or oil.
c. The snare, cold or hot.
d. Cutting off of turbinals by scissors or spokeshave.
e. Cutting out a wedge-shaped piece from the turbinals.
f. Acid caustics.
g. Electrolysis.
h. Free cauterization with galvanocautery in points or by linear cauterizations.
i. Submucous cauterizations.

Each of these methods has its adherents who employ it almost exclusively, and each has peculiar adaptation to certain cases, although most of us would agree that douches and aqueous washes are generally either inefficient or actually harmful. Watery sprays are generally harmful and oily sprays can do little more than aid in cleansing the nares and as carriers of antiseptics and stimulants, none of which can have much influence in reducing hypertrophy.

The cold snare that was so ably advocated by John N. Mackenzie twenty years ago is the best means we have for removing such hypertrophies of the posterior ends of the turbinals as can be engaged in it; but it is seldom satisfactory on the anterior two-thirds of the inferior turbinal. This operation is sometimes followed by troublesome bleeding, but, aside from this one drawback, it is to be highly recommended in suitable cases, for by it speedy relief is obtained and the subsequent reaction is slight. The galvanocautery snare is only rarely available for this purpose.

Turbinectomy either by scissors or the spokeshave is an easy operation, but we believe seldom justifiable because it destroys large mucous surfaces that can not be replaced and it often renders the passages abnormally large. Cutting of a wedge-shaped piece from the turbinated body would be attended by less reaction than cauterizations, but, as it is difficult to perform accurately and is liable to be attended by very annoying hemorrhage, the operation does not appeal strongly to many laryngologists.

Cauterizations by means of various acids, more particularly some form of acetic acid or chromic acid, is much in vogue with some operators. Our experience with this method has been unsatisfactory, because it destroys too much mucous membrane and causes the patient very much more pain and inconvenience than the galvanocautery.

Electrolysis serves a good purpose in a very limited number of cases, but for the majority it is inexact, tedious and unsatisfactory. It is advocated in cases in which the danger of adhesion is great and can not be obviated in other ways, but it very rarely appeals to us as the best operation in a particular case. We can not favor frequent cauterizations in points because the treatment appears tedious and the results are unsatisfactory. In a word, it has seemed puttering. From our standpoint linear cauterizations with the galvanocautery answer the best purpose in 90 per cent. of all cases.

This method was advocated by Seiler over twenty years ago, several years before the discovery of the anesthetic effects of cocain and, therefore, it did not come quickly into favor, although it was claimed by some of its advocates that it caused very little pain. Of all we have treated, only one patient can be recalled who admitted that such cauterizations without anesthetic were not very painful. It was found impracticable to make efficient cauterizations before cocain came into use, but immediately afterward and ever since we have employed this method extensively.

Before local anesthesia the cauterizations were so superficial as to be ineffective, but afterward with long cauterizations down to the bone we soon found that we might be practically sure of good results. There are very few cases in which we should expect as good results by any of the other methods, excepting the use of the cold snare in those cases we have spoken of above.

TECHNIC.

The operation that we most highly esteem for the affections of the inferior turbinated bodies consists of a long narrow cauterization, just deep enough to touch the bone. Occasionally similar, though much shorter cauterizations are applicable to the middle turbinals, but in this position we usually adopt submucous cauterization, a narrow electrode being run in at the edge of the turbinal in two or three places and carried upward and backward under the mucous membrane 8 to 12 mm.

For the swelling at the upper part of the septum we usually make oblique linear cauterizations, down to the bone, about 5 mm. apart and about 15 mm. long. For the inferior turbinated body we usually make at one sitting a line extending from the posterior to the anterior end along the junction of the middle third either with the inferior or upper third, the electrode being moved slightly backward and forward with a saw-like motion as the instrument is gradually drawn forward. These cauterizations are about 5 cm. long and from 1½ to 2 mm. in width.

In about 1 per cent. of all cases a cauterization of this extent causes too much reaction, and in these a line of

only half the length is made at subsequent operations. The cauterizations are not repeated until ten to fourteen days have elapsed, and then the operation is made in the opposite naris, the patient having usually been seen but once in the interim, and not at all in the case of those living at a distance, because in the long run it is less expensive for them to take the chance of adhesions. Usually the only object in seeing a patient between the cauterizations is to prevent adhesions which, except when the naris is very narrow from bony obstruction, can usually be done easily by passing a flat probe between the cauterized turbinal and the septum on the fourth or fifth day after the operation.

We do not think it wise to destroy much mucous membrane; indeed, it is never desirable to create a condition in which the area of healthy mucous membrane in the naris is less than normal. One of us once saw a patient in consultation that died shortly afterward from the effects of extensive superficial cauterization of the nasal mucous membrane.

We are not in sympathy with the plan of making small and frequent cauterizations, first, because this course keeps up an irritation and is liable to cause purulent infection; second, because the treatment by this method is more prolonged and costs the patient much more in time and money; third, because we believe the final results much less satisfactory. One of us saw a fatal case in which death appeared to be directly due to this kind of treatment, but we have never seen serious symptoms in any of the cases we have treated for these conditions.

In cauterizing we first anesthetize the part by rubbing it over with a thin swab of cotton saturated with a 4 per cent. solution of cocain guarded by small quantities of atropin, strophanthin, oleum caryophili and carbolic acid which add to the anesthetic properties of the solution and appear to prevent the constitutional effects of the cocain. The swab is rubbed continuously over the part for about 30 seconds, a new swab is then prepared and the swabbing is repeated from two to four times at intervals of a few seconds. A so-called knife electrode is used, having a blade consisting of a No. 22 or No. 20 platinum wire about 18 mm. in length (the latter is much the better when the current is strong enough to bring the wire to a cherry-red heat in about one second or to a white heat in two seconds).

In cauterizing the inferior turbinal the electrode is passed to its posterior end, the platinum wire is turned against the part to be cauterized, the circuit is closed and after a second the electrode is moved slightly backward and forward as it is slowly drawn to the anterior end of the body, care being taken just to graze the bone along a part of the line. The line of cauterization is then swabbed over with a strong compound tincture of benzoin and then both nares are freely sprayed with a solution of oil of cloves, 7 minims to the ounce of liquid albolene. The nostril of the side operated on is then closed with cotton, and the patient is directed to keep it thus closed whenever out of doors for the next four days, but changing the cotton as often as desired as it becomes moist. The patient is given a glass tube about 8 cm. in length with a caliber of 4 or 5 mm. and a rubber tube about 25 cm. in length wherewith to blow into the cauterized naris three times a day a powder containing 1.5 per cent. each of bicarbonate and biborate of soda, 3 per cent. of cocain and 25 per cent. of iodol with sugar of milk; about a grain of the mixture being used each time. One of the important functions of this powder is to open the naris three times a day and thus aid in preventing adhesions. The patient is also given a mild oily spray usually containing thymol, gr. .3; oleum caryophili, 3 minims; to liquid petrolatum, 1 oz.; to be used in both nares five times a day, the principal object of which is to aid in cleansing the nares.

Very little pain occurs after the operation, but the naris is usually nearly closed by swelling and inflammatory lymph for four or five days, although in many instances this does not occur. At the end of this time the inflammatory lymph comes away or may be removed and subsequently decided improvement in nasal respiration may generally be expected. After the fourth day in ordinary cases the powder is used only once a day for three or four days, but the oily spray is continued five times a day. Prescriptions must not be given for this powder because of the danger of formation of the cocain habit. At the end of from ten to fourteen days the opposite naris may be treated, and at similar intervals the remaining needed cauterizations may be made.

We have come to believe that four-fifths of the trouble caused by the nasal obstruction, whether it be in the posterior nares, the pharynx, the larynx or trachea, will disappear almost as soon as free nasal respiration is established, but the remaining one-fifth will only disappear slowly. In rare cases the nares feel dry for three or four months after the treatment.

ANALYSIS OF ONE HUNDRED CASES.

The nasal conditions for which cauterizations were undertaken have varied from an obstruction of approximately one-fourth the lumen of the naris to complete closure of the same, embracing, of course, the simple intumescent or intermittent forms and those of the chronic hypertrophic form, circumscribed or general, with partial or complete permanent obstruction. In many instances definite statements were given by the patients as to the ability or inability to breathe freely through the nose, in whom at the time of the examination the reverse conditions were present. In a number of these cases, exostoses of greater or less degree were present, necessitating removal before an entirely satisfactory result could be obtained. In others the results were satisfactory without any septal operation. When the hypertrophy of the posterior end of the turbinal body was great, the snare was employed.

The duration of the nasal trouble was variously given. Some patients give a history of having been troubled always, the shortest time was three weeks. The greater number had been affected for from one to six years.

In the intumescent form at the first examination, one or the other side was free in 18 and both sides in 3 cases. Swelling was present on only one side in 28 and in both nares in 15 of the patients. The inferior turbinated bones were also enlarged in two cases and the posterior ends of the turbinated bodies were considerably enlarged in four. Exostoses of the septum were noted in one or the other side in the hypertrophic form in 20 cases. Swelling of the septum occurred in both sides three times and in either side alone eight times. Simple deflection was found in one case and deflection and exostosis in four.

In the intumescent form exostoses were present in either side 19 times and in both sides 3 times. Swelling of the septum occurred on both sides 3 times, in either side 3 times. Deflection twice and deflection and exostosis the same number of times. Out of the 100 cases the septum was involved in 51, exclusive of those

in which merely swelling was noted. Adhesion and perforation were each found once.

The middle turbinal showed changes such as hypertrophy, swelling or polypoid degeneration in only 17 instances, and these changes were confined to one side. Polypi were found in five cases. Submucous thickening at the sides and base of the vomer was noted six times. Hyperesthesia was found three times, and in four cases the mucous membrane was noted as paler than normal. Altogether 295 cauterizations were made, 149 in the hypertrophic and 146 in the intumescent variety. The r. i. t. was cauterized 137 times, the left 143, the right septum 12, the left 1, and the r. m. t. two times.

In 25 of the cases it was necessary to perform other operations. These were 27 in number, exostosis removed in 11, polypi in four, adhesions cut in two, resection of septum in two, burr or trephine through turbinal in five cases, posterior ends snared in three, tonsils removed in one. Of these 25 cases nine had had some previous operation. In addition to these nine, ten more cases of the series had been operated previously, the operations consisting of removal of tonsils in five, Luschka's tonsil in three, cauterizations in nine, polypi in three, resection of septum in one, removal of spur in one and removal of part of turbinal in one. Several of these operations were combined in some of the cases.

Of complications or unfavorable conditions following the operation, bleeding was noted in seven instances. In no one of these cases, however, was it of any great importance, as it was not necessary to adopt any measures such as packing to stop the flow of blood. Attention is called to this merely to show that if sufficient care is used in having the electrode at the proper heat, bleeding can practically always be prevented. Only in those cases in which the wire is at too white a heat is there liable to be any trouble from this source. Adhesions were noted in five cases, but usually they were readily broken down by the use of a probe, sometimes followed by the application of a mild solution of silver nitrate.

When caution is used to avoid wounding the mucous membrane of the septum opposite to the point of cauterization, the liability to adhesion formation is greatly diminished. Nevertheless, it is nearly always desirable to pass a probe between the two surfaces the fourth or fifth day after the cauterization.

The use of a spray in the home treatment caused some trouble in seven instances. These patients complained of soreness of the nostril, sneezing, dryness, increased discharge or nausea. Headache, pain in the nose or neuralgia was complained of in a few cases following the cauterization.

On returning, several of the patients spoke of having caught cold with the attendant symptoms of an acute rhinitis, but this is a condition that should be anticipated as a natural result after most intranasal operations. Tonsillitis occurred within one day after the cauterization in one case. Increased secretion was complained of a few times and must have occurred much oftener. A feeling of dryness in the nose also annoyed a few patients. In one case the burnt area healed very slowly. Complete healing of the catarrhal condition, as a rule, takes place in from four to six weeks after the cauterizations have been completed, and after this time there is but rarely any complaint as to dryness, crusting or scabbing, though these symptoms occur exceptionally.

In no instance in this series was there any aural disturbance or complication attributable to the cauterization, although we have observed such a complication in one or two cases out of several thousand operations.

The shortest period of treatment was eight days; the longest two years; however, in this latter case the treatment was frequently interrupted for months at a time. Fourteen were treated for less than 24 days, sixty-three were treated for from one to six months, seventeen from this time up to one year, and seven over a year. It should be stated that in a considerable number of cases in which the treatment was prolonged the patients were from out of the city and were seen only at long intervals; consequently the treatment was not continuous, it being largely a matter of convenience to the patient when he would return. Of the sixty-three who were under treatment from one to six months, the greater part were under our care less than three months. The average number of consultations in this latter division was about six. In the average uncomplicated cases of hypertrophic or intumescent rhinitis, eight to ten weeks, with six to ten consultations all told, should be sufficient to effect a cure; relief, however, may be obtained in much less time, most patients noticing this in a few days after the first cauterization.

The time between cauterization varied greatly, from eight days to 13½ months. No patient was cauterized the second time before eight days had elapsed since the previous cauterization. After an interval of three months a succeeding cauterization was noted only sixteen times. From eight days to one month, the greater majority of succeeding cauterizations were noted. More cauterizations took place after a lapse of fourteen days than on the lapse of any other period of time.

A second cauterization is very rarely made before ten days have passed since the former one, and it is only made then when some special exigency requires. Experience has shown that it is better to wait about fourteen days before undertaking the operation. While the nose is not entirely healed even at this time, it has so far recovered as not to cause the patient any serious inconvenience because the succeeding operation is made in the opposite naris. In some instances, especially when the general health is not up to the normal standard and when consequently the wound heals slowly, it is better to wait a longer time.

The results of treatment in the hypertrophic form of rhinitis were excellent in eighteen cases, improved in nineteen, partial improvement in seven, not improved in one, no information obtained in five. In the intumescent form the results were excellent in twenty-seven, improvement in thirteen, partial improvement in three, no improvement in one and not stated in six. It is only fair to state that in most of the cases in which the results are given as not improved or partially improved, the treatment was unfinished. In those in which no statement of condition was found in the records, it is reasonably certain that the majority of them obtained relief.

Adding the results obtained in both series, we have seventy-seven cases in which the results were excellent or much benefited, ten in which partial improvement was found, two in which there was not improvement and eleven cases in which there was no statement as to improvement or lack of improvement, and of these eleven, in eight the treatment was of less than one month's duration and was unfinished.

When we separate the cases that required some other operation from the uncomplicated ones we find that the latter were 66 in number. The detailed results in these cases show that in 55 the results were excellent or im-

proved, in nine no statement was given in the records and in one no improvement was noted.

It is interesting to note that three cases of asthma were found in this list which were treated locally and with internal remedies. Although the nasal trouble was relieved, the asthma failed to improve in two. In one case with the improvement in the nose, relief was secured from the asthma. Mouth-breathing persisted in two cases although the nose was freed of obstruction. This was probably due largely to the force of habit.

CONCLUSIONS.

1. In the hypertrophic and intumescent rhinitis uncomplicated with deviations or exostosis of the septum, the galvanocautery properly applied is the method *par excellence* of treatment.

2. In cases complicated with deviations or exostoses of a slight or moderate degree the cauterizations of the turbinal bodies will be sufficient to bring about complete relief without the necessity of performing operations on the septum. The advantages to the patient in the avoidance of expensive, prolonged and tedious operations, pain, and subsequent discomfort, can readily be seen.

3. The dangers of middle-ear infection have been greatly exaggerated, only one case among several thousand cauterizations, and that not in the list of those published, having come under our observation.

4. The liability to adhesion formation is not great, provided sufficient care is taken not to injure the opposite septal mucous membrane and provided that when the subsequent swelling is marked a probe be passed between the opposing surfaces the fourth or fifth day.

5. A 4 per cent. solution of cocain according to the formula published is sufficient in the vast majority of cases to induce a complete local anesthesia. Three to six applications on a cotton-wound flat applicator being sufficient for this purpose. As a result of experience, especially where there is marked intumescence, we believe that a spray of adrenalin chlorid or suprarenalin, grain .1 to the ounce, materially assists in producing anesthesia.

6. The objection that the galvanocautery destroys too much mucous membrane is not valid if the cauterization is linear and is done properly; indeed, we believe that the full area of healthy mucous membrane is left by this method.

7. Scab and crust formation does not occur any oftener following cauterization than after other nasal operations; in fact, it was noted in but very few instances and in some of these a change in the spray solution caused a cessation of this trouble.

8. No packing is needed to prevent hemorrhage.

9. There is very little, if any, pain after galvanocauterizations of the turbinated bodies.

DISCUSSION.

DR. HERMANN STOLTE, Milwaukee, Wis., referred to the fact that the use of the galvanocautery for removing obstructions of the nasal air passages, recommended by Voltolini in 1879, and some years later by von Bruns and Seiler, received a marked impetus from the theory of Hack that excitation of certain parts of the nasal mucous membrane was responsible for certain forms of reflex neuroses, such as asthma, cardialgia, dysmenorrhea, etc. The method has undoubtedly been abused, but rhinologists of the present day, having a choice of two methods, either of which will give the same ultimate good result, have a tendency to choose radical surgery.

In this era of radicalism it is refreshing and satisfying to listen to the distinguished Nestor of rhinology, Dr. Ingals, who is defending conservatism and endeavoring to save thoroughly approved rhinologic methods, such as galvanocauterization of the nasal chambers in hypertrophic conditions, from being neglected and forgotten. Objections raised against this method of the danger of complications, such as middle ear abscess, sepsis, adhesions, destruction of too much vital tissue, too much reaction, and tedious after treatment, are not valid inasmuch as these dangers are avoidable by mastering the right technic and possessing the necessary skill, which is acquired by experience. In case of extensive hypertrophy where two cauterizations are necessary, better results are obtained by applying the second cauterization after an interval of two weeks. The cautery should burn through the whole depth of the mucous membrane down to the periosteum, in order to destroy a part of the deep seated vascular spaces of the erectile tissue and to produce scar tissue, which contracts the whole diameter of the hypertrophic or intumescent strata and fixes it to the bone. Before dealing with any case of hypertrophic or intumescent rhinitis by applying the galvanocautery, one should consider the causation in each case and treat it accordingly.

Dr. Stolte called attention to the Kopetzky method of submucous cauterization, published in the October *Laryngoscope*, vol v. Kopetzky inserts a sharp pointed platinum knife, 1½ inches long, anteriorly into the redundant tissue of the turbinate body along the septal side, pushing it backward along the mucosa as closely as possible to the bone. When *in situ* the current is turned on and allowed to pass through for a few seconds, then the instrument is immediately withdrawn before it cools. This method does away with any outer wound; except a small cut at the point of entrance of the knife. It does away with any scabbing and consequent synechia with the septum, shortens the time of procedure, and prevents destruction of the superficial epithelium and functionating structures of the subepithelial tissue; simplifies the after treatment, and when applied in suitable cases gives quick, satisfactory and lasting results. But the method is not universal. If the bone is uneven and irregular, due to rarefying osteitis or ostifying periostitis, met with often in hypertrophic rhinitis, it is difficult to introduce the knife and there is great liability of piercing the mucous membrane. In such cases Dr. Ingal's method is preferable. In intumescent rhinitis and in diffuse hypertrophic rhinitis, the galvanocautery is a very satisfactory remedy, but in the second class of true hypertrophic rhinitis, the irregular or lobular form, there exists so much hypertrophic tissue that the lower turbinated body rests on and fills out the whole floor of the meatus. In this form, galvanocauterization is mostly insufficient, and better results are accomplished by clear surgical methods, such as ablation by the snare, resection by the scissors, knife or saw. A marked abbreviation of the healing process is secured by Yankauer's intranasal suture, by which a primary union of the wound is obtained within a few days.

DR. CULLEN F. WELTY, San Francisco, said that hypertrophy is a condition of the turbinates accompanied by a new formation, usually dependent on or accompanying accessory sinus involvment, while congestive rhinitis is simply due to an increased amount of blood to the part, usually dependent on environment, adenoids, tonsils, or systemic disease. It is a well-known fact that there will always be some improvement in either affection following the use of the cautery. This improvement depends somewhat on the degree of obstruction, but more particularly on the pathologic lesion. As in hypertrophies, the contraction is of necessity less, and will have to be repeated frequently, so in the course of ten or fifteen years the exposed surface of the turbinate will have numberless scars. Following each cauterization the improvement will be less than the one preceding, which is dependent on previous linear adhesions binding the mucous membrane to the turbinate bone. In the course of time no improvement whatever follows, because the turbinate is a mass of scar tissue; its function as a turbinate has been destroyed. However, it continues to act as an obstruction. On the other hand, with the removal of hypertrophied tissues with the snare or scissors, the patient is entirely relieved at one sitting. This remains free indefinitely, and, furthermore, the progress of the disease is arrested. In Dr. Welty's practice, chronic congestion of the

turbinates is produced most frequently by adenoids or tonsils; secondly, by hypertrophy of the posterior end of the inferior turbinate; thirdly, by climatic conditions; fourthly, by systemic disease. If, after these conditions have been corrected the congestion continues, it is best to remove the inferior border of the inferior turbinate by scissors. To his notion this particular condition of the inferior turbinate is the only one amenable to treatment by the use of the cautery and to this he has serious objections. The cautery should never be used on the middle turbinate at all, because of the marked reaction which follows its use, which of necessity closes the exit of all the accessory cavities of the nose. Furthermore, serious infection is more likely to follow because of location. The removal of the anterior end of the middle turbinate is so easy that it should be done in all cases of hypertrophy or when chronically congested because it retards the secretion from the accessory cavities. Dr. Welty has never seen a dry throat follow nasal operations that was not accompanied by empyema of one or more of the accessory cavities. The apparent dryness was nothing more than the pus of an unrecognized empyema. He has had a few similar cases. In well regulated patients it is entirely unnecessary to apply a tampon to the nose. He has had a few hemorrhages, but it has always been when the patient has neglected to follow instructions.

DR. J. F. BARNHILL, Indianapolis, said that the paper has two divisions: Hypertrophic and intumescent rhinitis. Until 1899, when the Association met in Columbus, Ohio, in common with most practitioners of nasal surgery, Dr. Barnhill used the treatment by cauterization a great deal for both hypertrophied and intumescent states of the nose. At that meeting there was a long discussion concerning the advisability of cauterizing the turbinates, and since that time he has limited the use of the galvanocautery very much. There should be a very careful diagnosis of the condition which is present and for the correction of which the galvanocautery is to be used. With our present means of diagnosing a turgescent turbinate we should have no trouble in deciding on which case the galvanocautery should be used and on which it might be harmful. Dr. Barnhill has discarded the use of the electrocautery for the treatment of hypertrophic rhinitis. Certainly we can better, more successfully and permanently remove *en masse*, with the many instruments at hand to-day, any hypertrophic condition of the nose. He did not believe, however, that the time has arrived or will arrive at which we should entirely discard the use of the galvanocautery for the treatment of the intumescent inferior turbinate. For the reason just given by Dr. Smyth, he would never use the galvanocautery on the middle turbinate, for the reason that it is, in his opinion, rather dangerous to do so. Many unpleasant results follow the use of the galvanocautery in the region of the middle turbinate, one rather frequent sequence being tonsillitis. He has often seen tonsillitis of the follicular variety, and sometimes very severe, follow the simplest cauterization. Aside from this complication he has never seen any reason for not using the cautery in cases of simple intumescent rhinitis.

DR. J. F. BYINGTON, Battle Creek, Mich., said that, for five or six years, practically the only operation which he performed to relieve enlargement of the inferior turbinate, whether due to hypertrophy or intumescence, was cauterization supplemented by an occasional removal of a posterior hypertrophy by means of the cold or hot snare. During this time he cauterized several hundred of these turbinates. The method employed was practically the same as that described by Dr. Ingals, namely, deep linear cauterization extending from the posterior to the anterior end of the turbinate, produced by the knife cautery. The immediate effect was usually gratifying, but the results were not always permanent. He mentioned one case in particular illustrating this lack of permanency of the relief obtained: The patient first visited him about nine years ago. He had had several previous cauterizations of the inferior turbinates for the relief of intumescent rhinitis, the results of the treatment not being permanent. The case was clearly one of intumescence. At times the patient could breathe freely through the nose, at other times the occlusion of both nostrils was almost complete. Deep linear cauterizations were made in both inferior turbinates from back to front. The patient was relieved for a time, but returned for recauterizations at intervals of possibly a year, for several years. On one occasion Dr. Byington removed the posterior hypertrophies with the cautery snare, a method he has since replaced by the cold snare. This afforded more relief than he had previously had. But the patient returned again a year later with a return of his former symptoms. This time Dr. Byington examined the attic of his nasal chambers carefully under adrenalin and found markedly enlarged middle turbinates crowding on the superior surfaces of the inferior turbinates and thereby causing their engorgement at times. He removed both middle turbinates, and although he has seen the patient twice since the operation and after a considerable interval of time, his nose no longer has attacks of stopping up. Before attempting operations or cauterizations on the inferior turbinate he had endeavored to exclude causes outside the turbinate, which might be a factor in producing intumescence, recognizing that in this body we have an important functional tissue. This tissue may be prone to intumescence if crowded on by some adjacent unyielding structure, such as a bony enlargement of the middle turbinate, or a crest on the septum, and since paying more attention to these external causes he has been obliged to operate much less frequently on the inferior turbinate. He occasionally uses the cautery, and sometimes removes by the nasal scissors and snare the lower margin and posterior end of the inferior turbinate, but this is found to be necessary much less frequently than operations on the septum and middle turbinate.

DR. JOSEPH C. BECK, Chicago, said that if we consider the pathology of the scar, such as results from the cautery, and judge it from the analogy of scars in other parts of the body, we will understand why cauterization of the inferior turbinate body is so frequently unsuccessful. Everybody knows that a scar in the beginning contracts, but remains contracted only for a time; that whenever pressure is exerted on it it stretches. In the nose the scar holds for a time, then there is a turgescent condition and constant pressure on the scar, which stretches, and then it is freed. He considered the cautery in true hypertrophy a superfluous procedure.

DR. C. R. HOLMES, Cincinnati, said that during the first 600 or 700 cases of nasal operation on the inferior turbinate he used the galvanocautery extensively, but it was his experience that after the first or second winter they would return and there would be hypertrophy and obstruction again. It was for that reason he abandoned it for the more radical operation, and also because there was almost always more or less swelling and a certain amount of sepis connected with it, which, if the operation is done thoroughly, he did not see how to avoid. He had never been able to prevent swelling and a slight septic condition, with tonsillitis, etc., frequently following. So he resorted to the other method.

He had seen one very serious result from the use of the galvanocautery, a probable blindness after the removal of a polypus high up, with subsequent cauterization of the middle turbinate.

Dr. Holmes did not wish to condemn the galvanocautery, which he thinks has a place in hypertrophic rhinitis, but he did not think it had any place in the intumescent variety. This can frequently be cured by treating the patient constitutionally, by regulating his habits, stopping intoxicating drinks, looking after his method of living, the excretions and secretions. This condition frequently disappears without cauterization by local application of vibratory massage, without actually destroying any part. He always wants to raise his voice in protest against operating too extensively on the turbinates. While he has operated a great deal, he is astonished at the destruction that is sometimes done. Some operators think it is great to remove a big piece to show to the patient. That is a crime.

DR. WILLIS S. ANDERSON, Detroit, said that in the hands of one as skilful as Dr. Ingals, he did not doubt that benefit will result from this procedure, but in common with others he felt that there are better methods. He has restricted the use of the cautery to certain selected cases, and as the years pass he is using it less and less. If one cuts one's finger with a razor we know how quickly it heals if infection does not

take place; but if one burns one's finger with a poker it takes a week or more to heal. Nothing heals more quickly in the nose, as in other portions of the body, than a clean, sharp incision made with a knife. In hypertrophied conditions of the inferior turbinal he removes a little wedge-shaped piece, puts in one or two sutures, and in three or four days it is united, with little or no crust formation, and a permanent result. He noticed that the abstract of the paper states that eight to twelve incisions are often necessary to relieve the condition. To his mind the somewhat more radical procedure is really more conservative, as in one operation the condition can be permanently relieved.

DR. J. SOLIS-COHEN, Philadelphia, said that according to his recollection the introduction of the electric cautery into intranasal surgery was for the purpose of avoiding hemorrhage. The anatomic constitution of the turbinals, without vessel walls, and there being no retraction, renders them liable to hemorrhage. That was the danger feared, and in order to avoid it the electric cautery was introduced. In snaring posterior hypertrophies with wire there would be a great deal of hemorrhage, and there was difficulty in restraining it; but now we have found that this hemorrhage can be controlled, there is no longer the necessity for cauterization that previously existed. It is in the selection of cases we must trust for guidance to know when to use this agent and when not to use it. All these things swing like pendulums: everything was electric cautery at one time; then it subsided gradually, and now the pendulum is getting along the other way, and eventually it will stay where it ought to. There are occasions when this agent should be used and there are other occasions when it should not be used.

DR. E. FLETCHER INGALS, Chicago, said that he heartily agreed with the first speaker as to the time of repeating the cauterization; it should not be sooner than two weeks, and then it should be on the opposite side. He apprehended that the most trouble has come from oft-repeated cauterization. He has seen one patient die apparently as the result of the treatment, some one cauterized every day for two weeks. He sees no excuse for that kind of treatment. He fully agreed with the speaker, also, on the advisability of snaring off hypertrophies. One man thought the galvanocautery could not be controlled. He does not know of anything more easy to control. He readily understands that if he cauterizes the middle turbinate very often he is likely to get into trouble. Dr. Ingals knew of one case in which the cautery was used extensively in the upper portion of the nose which was speedily followed by a fatal meningitis. He has not seen numerous scars from cauterization. He has cauterized some cases four or five times on one side in the course of ten or twelve years, but in these cases little, if any, scar tissue is perceptible because we destroy very little tissue, so that there is always left as much healthy mucous membrane as normal. The paper states there was one case of tonsillitis in a hundred; he has seen more than one case and thinks such a sequel might be expected in 1 per cent. One man argues that the results of this treatment are not permanent. That depends on how much is done. As he stated in the paper, he does not cauterize any more than appears necessary at the time. The moment he thinks the nasal cavity is large enough he stops, hence the patient may be cauterized only once or twice before he gets sufficient relief and may not come again for two or three years or not at all unless more thickening develops. In our cases recurrence was very rare and in those it did not occur for a number of years. If in such patients he had cut off the whole turbinate there would have been no recurrence of the swelling, but they would probably have had many other difficulties due to abnormally large nares that could not have been remedied. He heartily agreed with Dr. Holmes as to the error in removing too much tissue. It is very easy to take out more than we ought. He said that he could not agree with Dr. Holmes that there is no place for the cautery in hypertrophy, because the line between intumescence and hypertrophy is not distinctly drawn and can not be. Intumescence is considered by many a true hypertrophy and in such cases the cautery is indicated, but there are some cases of hypertrophy where the cautery alone would not be sufficient.

CHEMISTRY OF SALIVA IN RELATION TO HAY FEVER.*

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In my previous papers[1] I have taken up the general subject of the saliva and the importance of its chemistry in relation to disease.

This paper, then, will be devoted more to observations, conclusions, laboratory technic and treatment. That many deductions can be made, both from a standpoint of diagnosis and treatment, by the examination of the salivary secretion, I think, has been proved beyond a doubt. The information thus gained is not at all limited to hay fever and allied conditions. However, in hay fever, ragweed fever, rye fever, horse fever, rose cold, lithemic rhinitis, etc., the examination of the saliva is most useful from the standpoint of etiology and treatment. The three conditions, excess of alkalinity, excess of acidity, and the neutral condition, each play an important part and each produce a different line of symptoms. The treatment under such conditions also varies greatly. This physiologic and so frequently pathologic secretion which comes to the surface as such and then goes back into the economy to perform a physiologic function, is the only instance in which we have this advantage of study. In my study of the salivary and nasal secretions, I have made a few observations which, to me, are exceedingly interesting.

We may have excessive alkalinity of the saliva, with acid urine; or we may have excessive acidity of the saliva, with alkaline urine. On the other hand, the urine excreted and saliva secreted may both be either alkaline or acid, or neutral.

Another interesting observation is, that in saliva in which there is an excess of ammonium or sodium salts, before acids can be administered, the sodium and ammonium salts must be converted into potassium salt; or, in other words, the alkalinity changed to one due to potassium. The chemical reason for this I have not yet been able to demonstrate. However, I have seen this illustrated in a number of cases.

The chemistry of the saliva and its relation to the opsonic index is certainly an interesting subject. Unfortunately, I have not carried on the comparative experiments with the opsonic index, so can not draw conclusions, but there is no question that the chemical change in the secretion certainly would throw some light on the opsonic index; as the gland secretion is obtained chemically directly from the blood, there certainly could be established a relation between the index and the chemical change.

Another observation which I have made in four cases, which illustrated this chemical change in the secretion of the nose and mouth, after the secretion had reached

* Read in the Section on Laryngology and Otology of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. "The Etiology of Hay Fever. The Relation of the Chemistry of the Saliva and the Nasal Secretions to Diseases of the Mucous Membrane of the Mouth and Upper Respiratory Tract." Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Laryngology and Otology. Also "The Chemical Pathology of the Saliva and Pharyngeal Secretions (Sialo-semeiology) as a Means of Diagnosis," read before the Twenty-fourth Annual Congress of the American Laryngological Association, Boston, May 27, 1902. Also "The Import of the Salivary and Nasal Secretions in Hay Fever," read before the American Laryngological, Rhinological and Otological Society, Lexington, Ky., May 1, 1903. Also "The Relation of the Chemistry of the Saliva (Sialo-semeiology) and Nasal Secretions to Diseases of the Mucous Membrane of the Mouth and Upper Respiratory Tract," read before the New York Institute of Stomatology, Nov. 6, 1903.

the surface, was that an irritating fume or vapor was produced by chemical change in the secretion from the structures mentioned. These irritating fumes were so marked that they were distinctly noticeable by the observer and any one coming in close contact with the patient. There was no disagreeable odor.

The sensitive areas of the nasal mucous membrane, as observed in certain individuals, no doubt render that individual more susceptible to irritants, but can not be the sole cause of the hay fever, as many individuals having no such sensitive area suffer from aggravated attacks of this malady, and others having equally sensitive areas do not suffer from hay fever.

The sulphocyanids, as well as the reaction, alkaline or acid, of the secretion, play an important part. All the cyanid preparations are poisonous, and the sulphocyanid is especially so. In some individuals, the nervous type, the low vitality, the low cell resistance, and general debility, which in themselves are predisposing factors—may such cases, often called neurotic, not be simply autoinfectious? Cases in which the sulphocyanids are present are necessarily autoinfected cases.

CHEMISTRY (SIALO-SEMEIOLOGY).

The chemistry of the normal saliva has been referred to in my previous papers. The principal soluble ferments, enzymes or diastases, exist in amorphous, albuminous substances. They can be separated by alcohol. The enzymes are not dialyzable.

The effect of acids and alkalies on the enzymes can be easily demonstrated in the laboratory, but in the systemic laboratory and in gland secretion, whether in intestinal, gastric or salivary, this action is not so easily demonstrable. Certain enzymes, amalose for example, only act in acid media, the degree of acidity also controlling the reaction. The slightest excess of the acidity, and the action is arrested. Certain other enzymes only act in alkali media, and others in neutral, and so on. Hyperacid saliva, on standing, changes in color from a golden yellow to very dark yellowish-brown. This is due to the change in the basic principle present. Frequently in excessive acid cases the presence of oxalic acid can be demonstrated in the saliva. When this is present any length of time there is likely to be caries of tissue or bone. In an alkaline saliva with sulphocyanids present, we frequently see the abrasion about the mucous membrane of the pharynx, tongue and cheek; in fact, a herpetic condition may occur. This is especially true in the excess of alkaline cases due to the potassium sulphocyanid or the ammonium form. Lactic acid and oxalic acid are frequently found in the saliva. The combination of uric acid and sodium phosphate will produce an acid sodium phosphate. In all such cases the mucous membranes are decidedly sensitive and irritable and the secretion acrid and burning. This is illustrated in various forms of rhinitis, and catarrhal conditions of the nasal mucous membrane, and also marked in the various forms of so-called hay fever.

LABORATORY WORK.

The following simple method of laboratory work I have used for a number of years, and is practically the same as used by Micheals and Dr. E. C. Kirk in his laboratory, and is the plan used by my laboratory assistant, Dr. J. M. Boice. I have used for a number of years in my office the color test in determining the presence and amount of sulphocyanids. The peculiar shade of pink obtained in this reaction can be determined by a color chart. It is empirical largely, but will enable the observer to determine fairly accurately the amount of sulphocyanids present, and he can also make his deductions from such color tests. In other words, a scheme something like the Goldsmith color chart, or hemoglobinometer, could be established, which would be of great service in the rapid examination of specimens. I had hoped to present such a color chart with this paper, but was unable to complete it.

Dr. Kirk, in his work, uses extensively the polariscope, and I find it of great service in determining crystals and an excellent aid in the chemical analysis of this secretion.

SALIVARY ANALYSIS.

The following simple working method for the routine examination of the buccal secretion is followed:

Collection of the specimen should be conducted with care to avoid contamination either with tooth powders or washes, or with various chemical substances; if possible, a sterile receptacle should be used.

The ordinary porcelain test tablet with from four to a dozen shallow cells is used for the test. The reagents are: A 10 per cent. solution of ferric chlorid in distilled water, Nessler's reagent, a solution (about 5 per cent.) of potassium chromate, solutions of silver nitrate and sodium hydrate of similar strengths, and, finally, Von Jaksch's solution of iodo-potassium iodid.

Inquiry should be made of the patient as to whether or not the saliva has any definite taste in his own mouth, and a note should be made in this regard under the heading, "sapidity." A note should also be made under each of the following heads: odor, color, reaction, consistence, aspect and sediment.

A few drops of the secretion is then placed by means of a small pipette on each of four cells on the test tablet. The worker must familiarize himself with the action of his set of reagents on normal saliva, as his results are simply qualitative and the substance tested for is stated as increased, normal or deficient, depending on the nearness of the color or the reaction to that obtained in the average healthy specimen. One drop of the reagent is employed. Ferric chlorid produces from the faintest pink to the most intense vermilion color, the normal reaction must be mentally compared with that under examination and the result noted in reference to the sulphocyanid content. The ammonia content is seen and expressed in a similar way after addition of Nessler's reagent.

The chlorids are determined by the addition of a very small drop of the potassium chromate solution, followed by a drop of the silver nitrate solution—the resulting reddish silver chromate being soluble and disappearing in proportion to the quantity of chlorids present. A substance similar to glycogen is precipitated on the addition of Von Jaksch's solution, and, if to this mixture a drop of sodium hydrate solution is added, the presence of acetone is demonstrated by the odor of iodoform, which odor must be distinguished from that of the periodates sometimes formed.

The above laboratory outline does not apply to the quantitative analysis. The methods employed for this in organic chemistry are necessarily long and complicated.

I lay great stress on the determination of the predominance of sodium or potassium salts in the saliva. The process I use for this determination consists, first, in evaporation of the saliva to small bulk over a water bath, it being better to use for this purpose the dialyzed

saliva to rid the concentration of the otherwise glairy consistence. A faint crystalline precipitate on addition of hydrochloroplatinic acid is an indication of potassium, while a similar result, when potassium pyroantimoniate is added, indicates sodium.

A reaction may occur with both tests when a mixture of the salts is present, or for the same reason, or because of the very small amounts present, no visible reaction may occur. At best, the reactions are not pronounced and the tubes may have to stand some hours before a judgment can be given.

The use of the micropolariscope has made possible the recognition of many salts which, under the ordinary objective, have little or no distinctive character.

The absence of the normal salts, as well as the presence of abnormal ones, is of importance. For any degree of success here, the saliva must be dialyzed before being placed on the slide for examination; the slides are in best condition from three to ten days after they are made.

I am indebted to Dr. J. M. Boice, my laboratory assistant, for much valuable aid during the past year in this interesting laboratory work.

The so-called susceptibility of the mucous membrane is not a structural one, but is due to the irritation coming from within. The effect of these altered secretions is also seen in cases in which the mucous membrane is dry, with a sensation of burning and irritation, and yet there is practically no inflammatory process. This certainly is due to an altered secretion coming in contact with the mucous membrane surface and producing local irritation.

In many cases in which there is altered chemistry of the saliva, the patient complains of an excessive flow of this secretion, and in many instances of a soapy taste in the mouth.

CONCLUSIONS.

So-called hay fever varies in different individuals. The cause is not the same. In at least 60 per cent. of the cases I have been able to demonstrate that the local irritation is primarily due to an altered chemistry and an altered resistance, and these 60 per cent. of cases may be divided as follows:

1. The class in which the secretions when coming to the surface are non-irritating, but undergo chemic change and produce irritation. This may be either acid, alkaline or neutral.

2. Cases in which the secretion, when it comes to the surface, is irritating without any chemical change.

3. When the secretion comes to the surface it comes in contact with certain extraneous material and certain secretions coming in contact with certain materials produce by chemical change an irritant; hence the term ragweed fever, rose cold, etc.

Any individual having nasal obstruction in the form of deflected septum, narrow nostrils, polypoid growths, etc., or the neurotic type with lowered vitality, may suffer a more aggravated form than those not having such nasal obstruction or underlying systemic condition. I do not say that this is the cause of all cases of hay fever, but I do say positively that at least 60 per cent. can be worked out on this basis. Excessive alkalinity will produce really more irritation than excessive acidity. It is a well-known fact that strong alkalies are as caustic and escharotic as strong acids.

I do not mean to state in this paper that all cases of hay fever can be cured or, rather, are cured. Neither do I say that the altered chemistry is the cause in all cases, but I do state this emphatically, that, at least in 60 per cent. of the cases it has been my privilege to study, the underlying factor has been worked out on this basis, that the so-called susceptibility, the nervous element, the lowered vitality cases, all can be explained on the basis of altered secretion. One of the worst cases I have ever observed was in an individual who was suffering from autoinfection due to the enormous quantities of sulphocyanids present in his secretion. He was the typical neurasthenic and neurotic type, but it was purely acquired, and when once his general condition was restored to the normal his hay fever disappeared; but in restoring his general condition to the normal his secretion was freed from sulphocyanids and also excess of ammonia compounds in his saliva.

TREATMENT.

The treatment of hay fever has always been subdivided into local and systemic treatment. It is a well-known fact that there are many cases of hay fever in which any local treatment, instead of relieving the symptoms, seems to either aggravate them or to bring on an attack. Occasionally, however, the alkaline or acid douches seem to afford some relief. This is easily explained by the fact that the alkaline or acid would change the reaction of the irritating secretion; yet, if either solution was used in the wrong type of case, this influence would only be aggravated. Chemical experience has proved this to be true. Do not understand me to say that this is applicable in all cases. Some cases certainly receive considerable benefit from local sedatives, and if certain sensitive areas are removed the susceptibility on the part of the individual would be lessened. At the same time the underlying cause would still remain.

The plan of treatment which I have followed, and which has been based on the chemical analysis, necessarily varies in different individuals. The general plan, however, is attention to the secretions. I mean by that the elimination—active intestinal tract, stimulants to the liver, free action of the skin. In other words, increase elimination. The treatment will depend on whether the condition is alkaline, acid or neutral, whether it is due to the presence of ammonium salts, the sodium salt, potassium salts, or whether there are present sulphocyanids, lactic acid or oxalic acid. To meet these conditions citrate of soda, lactate of soda, benzoate of soda, which renders inert active compounds, boric acid, dilute hydrochloric acid, dilute nitric acid, various forms of salicylates, sodium chlorid—all may be used to counteract a certain chemical ingredient present in the saliva, so that the drug must be selected purely on this basis.

As stated before, I have seen several cases relieved by the administration of sodium chlorid, others by the administration of benzoate of soda, others by boric acid, and so on through the list, after first increasing elimination as much as possible, through the skin and intestinal tract. The patient should always be instructed to drink plenty of water. Following this basis, I have, without any application whatever to the nasal mucous membrane, succeeded in, as I have said before, about 60 per cent. of the cases. The other 40 per cent. I have been unable to relieve by either local or systemic remedies, and was also unable to analyze and separate the irritant and the secretion. Whether these 40 per cent. belong to some other type of cases I do not mean to say, but I do wish to make it emphatic that the cases relieved passed through the attacks year by year by taking the

medicine before the onset and occasionally during the period in which they have suffered from the hay fever. Some cases extended back over a period of eight to ten years, and others varying down to the last year.

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DISCUSSION

ON PAPERS BY DRS. KYLE AND CURTIS.*

DR. J. SOLIS-COHEN, Philadelphia, stated that he agrees with those who think that hay fever requires first, a nervous temperament; second, a want of elimination of the natural secretions, autointoxication, one might say; and, third, the irritant. There are very few poor patients who suffer with this disease, unless they happen to be servants of the rich who suffer a good deal, and are thus exposed. Hay-fever patients live in overheated houses, wear too much clothing, and in that way a great many things which should be eliminated remain in the system. Many public individuals who are prominent members of the Hay Fever Association and who have means to go away and get rid of the source of irritation, are men of intense cerebral energy. The nervous system has a great deal to do with it. Many patients with deformities of the nasal passages never have hay fever, while, on the contrary, many patients with hay fever have no nasal deformity. The deformities should be corrected as a matter of course, then every disturbing element possible removed from the patient. Dr. Solis-Cohen advised letting the patient wear light clothing, no more than is comfortable, and giving not a bite of food more than is necessary to keep from being hungry, avoiding highly dressed meats, and so on. To ease the air passages give a little lubricant night and morning; it will give comfort and supply the loss of the natural lubricant. There are many peculiarities of hay fever. Dr. Solis-Cohen mentioned the case of a patient, a prominent man in Philadelphia, who lived in the country thirty miles from the city. One year, when suffering a good deal, he had occasion to go down into the cellar, and at once found relief. This occurred several times, and eventually the man built a little office in the cellar and remained comfortable during the season. Dr. Solis-Cohen had two other patients, prominent citizens, a wife and husband, both subjects of hay fever. The husband, a large coal operator, had a good deal of business in the coal regions near Pottsville. It happened that, when the wife was in Pottsville, she was free from hay fever and when the husband was there he had it. When the husband was in Philadelphia he was free from hay fever, and when the wife was there she had it. Consequently they had to be separated.

DR. GEORGE L. RICHARDS, Fall River, Mass., said that he has not used the Dunbar serum, but that nearly all his well-to-do patients have used it, because they tell each other of it, buy it in the open market and follow directions; and as a rule they report it a failure. He has found that combination of some simple things, while it does not cure hay fever, does something toward relieving the attack, whether the particular cause be in the elimination of the secretions or due to a hyperesthetic condition of the nasal mucous membrane, or the result of spurs or hypertrophy of the turbinals. The patient comes with a nasal discharge, can not breathe, wants immediate results; and a good many patients can not afford to buy the Dunbar serum. The thing which seems to be necessary to give the patient relief is to get air to the nose and to lessen the degree of secretion, and Dr. Richards has been trying to find a simple method which will do that. He has found that adrenalin chlorid in strong solution harms the patient; in weak solutions, so weak that when first used there is not much effect, it is good. He has used it in a non-irritating solution of 1 to 14,000. The patients can use that themselves, and they do not get the subsequent hyperemia. During the last two or three years he has used for office work a method which gives better results, and that is the use of the original Armour powder of suprarenal extract. He takes a small quantity, in the proportion of 1 to 4, adds thymol iodid and uses it as a powder in the nose, sometimes with a preliminary cocainizing and sometimes not. The adrenalin powder heals the congestion, whereas the thymol iodid is a pronounced astringent in the nose and the effect lasts many hours. Simultaneously with that he uses some of the old-time remedies, belladonna and atropin, to the extent of getting dryness of the throat. One of the many forms of coryza tablet contains quinin and minute doses of morphin. He occasionally uses a tablet, beginning with 1 to 500 of atropin, and tells the patient to discontinue as soon as the throat begins to get dry. He has the skin cared for, the bowels thoroughly emptied and all the bodily secretions in good condition. That does not exactly cure hay fever, but it gives the patient relief so that he does not have to discontinue work, and it seems to Dr. Richards the nearest approach to a rational treatment of the symptoms.

DR. EMIL MAYER, New York City, declared that in his opinion the whole gist of this subject lies in its etiology. The suggestion that certain conditions of the saliva may be a cause is certainly an important one, as is the suggestion, also, of a particular nervous susceptibility on the part of the patient. That is well shown by the fact that these conditions occur at certain times in the year. If a certain chemical condition of the saliva alone were responsible, without susceptibility to foreign bodies of some kind, why do not attacks of hay fever occur in midsummer? In this country and in Germany there is a marked difference. Dunbar, when he sent his serum to this country, was thinking of the kind of hay fever which occurs in Germany some time in May and ceases with the beginning of hot weather; while ours begins in the middle of August and ceases with frost. So there must be an underlying condition besides the condition of direct local irritation. Dr. Mayer was under the impression that hay fever was primarily a disease of the well-to-do until he began work in this direction, and had some newspaper notoriety that brought a number of people to his attention. One patient was a coupler in the yards of the New York Central Railroad, about as far away from the rich as any one could be. Another was a track layer, and almost all who applied to Dr. Mayer for treatment were so poor they could not pay for anything. He thinks that the ultimate result of all work done by others, as well as by Dr. Curtis, will be that eventually more than a single etiologic factor will be discovered, and then we will be on the high road to cure this distressing condition.

DR. H. W. LOEB, St. Louis, stated that some years ago he published the results of a considerable number of cases in which the Dunbar treatment was used. Since that time, as a matter of course, he has made careful observations of the cases treated then, and those coming on since. The patients with rose fever, which is similar to the hay fever of Germany, have all been relieved, at least all who have remained under his observation, by the use of the Dunbar serum. This is particularly noted in a number of cases under observation for three or four years in which the attacks had been regular until the serum was used. The next year after the treatment had been successful the patient came to the office once and was told to use the serum as he did before. In some instances Dr. Loeb experimented by having the patient wait until the attacks came on, but ordinarily suggested that the serum be used before the attack. This has reference to the June fever cases. In the fall fever the results have not been so good; even with the serum Dunbar prepared before he came to this country, the results were not so good as with the spring serum, so-called. The serum prepared from rye and other grass pollen was used. However, Dr. Loeb found a tremendous difference in the method of application, in the quantity that was used. The patient should be kept under observation so that only the minutest quantity of the serum be used. It is necessary that the individual dose be determined by the individual case. Dr. Loeb has found in the majority of cases the patients either were not getting any serum in the nose on account of the spurs or swellings, or were getting too much. The serum is irritative when the quantity is too great. Acting on that, he took patients who had secured the remedy and used it themselves with negative results, and by carefully adjusting the dose, using nothing else, he was successful in many of the cases. He believes that the final word has not been spoken. He does not believe that the serum as now made

*The paper of Dr. Curtis appeared in THE JOURNAL July 13, 1907.

is expected to be successful on account of collateral features. He thinks that enthusiasm on the part of the physician has much to do with the case. It may be that is what cures the patient.

DR. GEORGE N. JACK, Buffalo, N. Y., said that he has done some original work along these lines, and while somewhat encouraged, yet he has found a great many discouraging features. He has worked with the idea that hay fevers are constitutional diseases, and that the local irritation and local condition is of minor importance, and he is receiving some support. He considers that hay fever is asthma of the mucous membrane of the head or nose and throat, and that asthma is the same condition carried down into the larger air tubes. It is not the fault of the mucous membrane; the fault is in the blood. The saliva has nothing to do with it. The normal secretions are altered when a person has hay fever, but that does not make hay fever. The altered condition of the secretions and the saliva, like the analysis of the urine, teaches a great deal, but it does not teach that the condition arises from the pollen itself, and it never will. Dr. Jack agrees with Dr. Kyle that the saliva in these secretions comes from the blood. If a physician knows the cause of a condition he can go ahead and give the patient an intelligent prognosis.

DR. FRANK M. CUNNINGHAM, Macon, Ga., said that if it is admitted by the maker and originator of the Dunbar serum that it is not yet in a perfected state, then we can accept the condition. The fact is, he said, that in every medical journal the Dunbar serum is advertised as a positive cure for hay fever. The position should not be taken by this Section that approval is given to this product, when it is not, and while the product is an unfinished, imperfect affair.

DR. CULLEN F. WELTY, San Francisco, said that as predisposing factors in the causation of hay fever he would mention first, pathologic changes, particularly of the middle turbinate; second, malformation; third, systemic disease and its influence on the nasal mucous membrane. In all these conditions the mucous membrane is more or less inflamed, and is made more susceptible by anything of an irritating nature in the atmosphere. About five years ago, while in Vienna with Hajek, he wished to do some experimental work with Dunbar's pollantin. Hajek said that they had no hay fever there; however, there were patients who had symptoms similar to those of hay fever. They all had pathologic changes or malformations, and when these were corrected the patients made uninterrupted recoveries. The climate of Vienna is similar to that of the middle West, and Dr. Welty can not see why the same conditions should not prevail. In San Francisco he has had a few patients with symptoms similar to those of hay fever. In every case he has seen the symptoms entirely relieved by removing the cause. He is of the opinion that the majority of the so-called hay-fever patients have a pathologic lesion, malformation of adenoid tissue, which leaves the nasal mucous membrane much more susceptible to any form of irritation. In those cases in which he has not been able definitely to locate one of the aforesaid conditions, he has removed the anterior half of the middle turbinate, in the hope of uncovering something. At times islands of tissue have made their appearance and were removed. At other times the middle turbinate so impinged on the lateral wall of the nose as to cause the trouble. In all the cases with which he has had to deal the recovery was complete. However, he does not believe that the aggravated forms of hay fever are found in San Francisco.

DR. D. BRADEN KYLE, Philadelphia, said that in a paper which he read at Boston, and in one read at Washington, the effects of climate and changes in altitude are fairly well explained. He believes that there is no one cause of hay fever, but a number of underlying causes. The condition is said to be more aggravated in patients of the neurotic type, but he does not think so. He has seen the worst hay fever in a cold-blooded man who was not a neurotic in any sense, and he has seen it almost if not quite so bad in a patient of neurotic temperament. What, he asked, is the underlying cause? Is it ragweed, the fumes from animals, or roses, or hay, or what? The line of work he is trying to follow out is to find not one cause, but a number of underlying causes, for that gross condition known as hay fever or hyperesthetic rhinitis. Probably when the underlying cause is reached a great many more names will be added.

DR. H. HOLBROOK CURTIS, New York City, said he has spent much time in an analysis of hay fever trying to get an intelligent explanation of his own failures, and also of the peculiar conditions in regard to the Dunbar treatment, because from some sources he has received the most fulsome letters saying that every case in which the patient was operated on was a perfect success. Then the next might state that in twenty cases there was not a single success. Dr. Curtis has had 8,000 replies to letters sent out in regard to his fluid extract of ambrosia, which has given him remarkable confidence. At first 60 per cent. were favorable, but in the end the thing sifts down and he sees that the effect of suggestion is so great that he has come to consider the climatic treatment of hay fever the only reliable and sensible one. The secretions of the mouth are different in disease. The secretions of the parotid glands are different from those of the sublingual gland. It is known that hay fever changes these secretions, but it is not known that these secretions as changed cause the condition which produces hay fever. Other things also change these secretions. There is a susceptibility, but is it of the secretions or the system? This is a remarkably interesting subject, he said, and the more one studies it the less he knows about it.

SLOW FEVER.*

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Synonyms: Typho-malarial fever; simple continued fever; remittent malaria fever; Willaccochee fever; continued fever; bilious fever; typhoid fever.

Definition: A continued fever occurring almost exclusively during the warm months and lasting from one to ten weeks.

From the above list of names, by which this disease has at times been designated, it will be seen that there has been in the past most divergent views as to its causation and real nature. Many physicians living in the swampy regions of southern Georgia maintain that this affection is but a severe form of malaria, while others of equal capacity and intelligence are quite as positive that it is a mild form of typhoid fever; there are not wanting still others equally as capable who hold that the malady is neither one nor the other, but is a separate and distinct disease. These varying views have been maintained by their several advocates probably since the settlement of the country, but proof of their truth has been, so far as I am aware, based only on the clinical aspects that the disease presents and, more recently, on blood examinations for the malaria parasite.

The subject is then seen to be at present in a hopelessly confused state; there was no possibility of an agreement being reached except by actual proof of the truth of one of these opinions by the demonstration of the causation of the disease in question. With this object in view the present investigation was undertaken.

METHOD OF OBTAINING DATA.

It is much to be regretted that the assistants who aided me in this investigation comprised such a small working force that it was out of the question to secure full and complete clinical data in the cases of "slow fever" investigated. The material for the work was collected over a wide area embracing the entire southwestern portion of the state. In a number of instances specimens were sent by the physician in charge—the localities from which they were obtained being too inac-

* Read in the Section on Practice of Medicine of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

cessible for any of us to make a personal visit to the patient—and in such cases we necessarily had to depend on data obtained from the medical man in charge; this accounts for the lack of clinical records in several cases.

It was likewise true that in not a few instances the patients were, on account of ignorance, but little disposed to aid us in our work, and it was only with the greatest difficulty under such circumstances that specimens were obtained. Charts were distributed among the physicians with the request that records be made of the clinical course of the disease in their several patients, but as in nearly all cases these had to be left in the hands of the patient's family to fill out, practically no records of any value were secured. It should, however, be understood that our prime object was to discover the etiology of the disease, and I consequently felt that everything else should be sacrificed in order to determine this; it is gratifying to say that this object has been accomplished according to accepted bacteriologic standards.

ETIOLOGY.

Opinion as to whether or not we have succeeded in ascertaining the etiology of this disease will depend entirely on our views as to the accepted ideas concerning the causation of typhoid and paratyphoid fevers. As is well known, the etiologic relationship of the typhoid bacillus to typhoid fever has never been put to the crucial test of human experimentation, and as typhoid fever does not occur in the lower animals, final proof of this connection is as yet wanting. This is equally true of the so-called paratyphoid bacillus. Notwithstanding this lack of final proof, a vast majority of bacteriologists agree that these organisms really stand in a causative relationship to typhoid and paratyphoid fever respectively. If this view be correct there can be no doubt of the success of our labors, and although the organisms in question were found in only 73.3 per cent. of all cases investigated, it seems in the highest degree probable that if these germs in reality produce the disease in question more careful and thorough examinations would have demonstrated their presence in all of the other instances.

At all events the typhoid and paratyphoid organisms were isolated in practically three-fourths of the cases under investigation, and agreeably to current views there could be no further doubt as to the real nature of the fever in those instances in which the organisms were found. It is certainly true, whatever views we may hold, that the isolation of these germs in such a large percentage of cases is extremely interesting and more or less significant.

As has been stated, typhoid and paratyphoid bacilli were demonstrated in 73.3 per cent. of all cases investigated; of these the typhoid organism was found in 51.1 per cent., the paratyphoid in 20 per cent. and a mixed infection in 2.2 per cent. of the cases.

CULTURAL DIFFERENTIATION.

As is well known, the isolation of the typhoid and paratyphoid bacilli, particularly from the feces, is a matter of great difficulty. Unfortunately there is a most close relationship between these bacteria and the colon bacillus, so close that it seems to me there can be no question that they are varieties of one and the same organism. Morphologically, and in their staining reactions, it is impossible to distinguish these bacteria one from another, and it is only by careful cultural experiments that this can be accomplished. This close resemblance had led to a vast deal of work with the idea of devising some method or methods by which it would be possible always to differentiate these bacteria. Thus earlier investigators laid great stress on the fact that the typhoid bacillus usually grows in a colorless film on potato, while the colon bacillus produces a thick grayish pellicle. Much also was made of the fact that as a rule the colon bacillus produces indol while the other organism does not.

A striking peculiarity of the colon bacillus is the fact that it produces gas in media containing sugars, a peculiarity which it does not share with the typhoid bacillus. For a time considerable stress was laid on the fact that in media containing iodid of potassium the colon bacillus usually develops much more rapidly than does the typhoid, but recently this method of differentiation has not been so much employed. Among the further peculiarities of these organisms on which investigators have relied to differentiate them are the facts that the typhoid is usually somewhat more slender than the colon bacillus, that their flagellæ are generally more numerous, that they produce less acid and that their growth is usually not so rapid as is the case with the other organism; the colon bacillus coagulates milk in which it grows, but the typhoid bacillus does not. Unfortunately it has been shown that these various methods for differentiation of the organisms in question can not be entirely relied on, as it now and then occurs that the colon bacillus will show some of the peculiarities of the typhoid organism, and, conversely, the latter germ not infrequently exhibits characteristics that are supposed to be peculiar to the other.

Within recent years highly successful attempts have been made along the line of preparing special culture media, the object of which was to isolate these bacteria from each other by means of the chemical substances that they produce. Chief among these is the culture medium invented by Drigalski and Conradi[1] and based on the well-known fact that in the presence of both carbohydrates and nitrogenous substances the colon bacillus produces acids from the former, while the typhoid bacillus breaks the albuminous material into products that give an alkaline reaction. This medium contains crystal violet, which is supposed to hinder the development of other bacteria that might be present in the material under examination.

THE MODIFIED DRIGALSKI-CONRADI MEDIUM.

The Drigalski-Conradi medium, when made according to the directions of the originators, was found to give somewhat inconstant results. Following the suggestions of Terburgh,[2] the method of preparing this medium was modified as follows:

2 liters of bouillon (3 pounds of beef to 2 quarts of water).
20 gm. (1 per cent.) peptone siccum (Witte).
20 gm. (1 per cent.) neutrose.
10 gm. (0.5 per cent.) salt.
60 gm. (3 per cent.) agar.
30 gm. (1.5 per cent.) lactose c. p.

After the solution in the autoclave is complete the medium is made faintly alkaline to litmus, 4 c.c. of a 10 per cent. soda solution and 20 c.c. aqueous crystal violet (B. Höchst) solution (1 to 1,000) are added, and the whole is sterilized; 36 c.c. of a sterilized solution of litmus, prepared by pouring boiling water over pulverized ordinary commercial litmus, is then added. The alkalinity of this medium should, at the least, be 0.04 per cent. of pure soda.

1. Ueber ein Verfahren zum Nachweise der Typhus Bacillen, Ztschr. f. Hyg., xxxix, 283.
2. Die auf dem v. Drigalski Conradischen Nahragar wachsenden Bacillen, etc., Centrlb. f. Bakt., etc., xl, 2, 258.

Typical colon bacilli on account of the large quantity of acid that they produce turn the medium red in the immediate vicinity of the point where the growth occurs; the acids do not diffuse to any considerable degree owing to the great proportion of agar that the medium contains. The typhoid colonies do not develop so luxuriantly as the colon and they are more transparent; the medium in their immediate neighborhood remains blue. From the foregoing it is seen that where the two organisms in question develop in a characteristic way differentiation between them is extremely simple.

THE ENDO MEDIUM.

Another culture medium which is quite as satisfactory as that of Drigalski-Conradi for the separation of the two organisms in question is that of Endo.[3] Like the former medium, it depends for its value on the production of considerable quantities of acids by the colon bacillus and the detection of the colonies by the change in color produced in the culture medium on which the organism grows. The medium as slightly modified by us is prepared as follows: To 1,000 c.c. of 3 per cent. neutral nutrient agar add 10 gm. (1 per cent.) lactose, 10 c.c. (1 per cent.) of 10 per cent. soda solution. These ingredients are mixed and sterilized; then 50 c.c. of a sterile 1 per cent. watery solution of basic fuchsin is added. Then 25 c.c. of a sterile 10 per cent. sodium sulphite solution is added, the whole well shaken, and the medium at once poured into sterile Petri dishes. When cold it has a faintly pinkish tinge.

The reason that the above modification was devised was on account of the fact that we found that the medium again became red if sterilized after decolorization by the sodium sulphite. The alkalinity of this medium generally is between 0.1 to 0.15 pure soda with litmus paper as an indicator. It is particularly necessary in preparing this medium to give attention to the following details: 1. The lactose should be pure; if adulterated with cane sugar the typhoid bacillus also produces acids which render its differentiation from the colon bacillus very difficult. 2. The sodium sulphite solution must either be kept in a well-corked bottle or should be freshly made. 3. The culture medium must be preserved in the dark, as light causes it gradually to turn red. When colon bacilli are planted on this medium the colonies grow rapidly and become very red; a metallic luster quickly appears over their surfaces, which is highly characteristic. The typhoid colonies are small, have a transparent appearance and show only a faint pinkish color.

THE METHOD OF LENTZ AND TIETZ.

In 1903 Lentz and Tietz[4] discovered the fact that malachite green, when added to the customary culture medium, possesses the important property of more or less hindering the development of the colon bacillus, while the typhoid organism is relatively unaffected; this property of malachite green is particularly important where investigations of the feces are being carried on. We were not particularly successful with this method, however, and, as the same object could be attained more satisfactorily in other ways, we did not continue the use of the medium throughout the course of our investigations. It seemed to us by no means so certain as the method of Ficker and Hoffmann,[5] in which the growth of the colon bacillus is hindered by the presence of caffein in the medium; this method is certainly very serviceable, and we believe more reliable than the one just referred to.

GAEHTGENS' METHOD.

Perhaps the best of all the media for the detection of typhoid bacilli in badly contaminated material, such as feces, is the method of Gaehtgens,[6] which is a combination of the procedures devised by Endo, and Ficker and Hoffmann. In this method caffein in the Endo medium hinders the development of the colon bacilli, while the color reactions differentiate these organisms from the typhoid and paratyphoid bacilli. The medium is prepared by simply adding 0.33 caffein to the Endo agar solution already referred to.

It might be mentioned at this point that we have used with entire satisfaction the bent glass rods recommended by Drigalski-Conradi[1] for planting on plates the organisms under investigation. These consist of ordinary glass rods about 20 cm. in length and an arm about 3 cm. long bent at right angles to it at one end. The material to be examined is rubbed up well with water in a sterilized mortar. The culture is then made by inserting the small arm of the glass rod in the mixture, removing with a shake the excess of liquid adhering to it, and then drawing it lightly over the surface of the medium in the Petri dish.

BLOOD CULTURES BY CONRADI'S METHOD.

When it is wished to make cultures from the blood the method recommended by Conradi[7] is undoubtedly of great value—supplanting, in my opinion, the earlier procedures of Schottmueller,[8] who first called attention to the value of bacteriologic examinations of the blood in the diagnosis of typhoid fever. This procedure is based on the fact that the bile has a decided action in preventing the coagulation of blood, while the bacilli grow excellently in a mixture of these two substances. The method is carried out as follows: To ox bile 10 per cent. each of peptone and glycerin is added, and after sterilization 10 c.c. of the solution is measured off in as many tubes as may be desirable. Blood is then obtained from the patient by withdrawing it from a vein with a syringe, or, as Conradi prefers, from the ear; 0.5 to 2 c.c. is sufficient. The blood is added to the bile solution and put in the incubator for about sixteen hours. If typhoid bacilli be present their number greatly increases. Cultures are made from this mixture on any of the media by means of which it is possible to determine the true characteristic of any growth that may be present.

In the first instance, then, where it is desired to isolate typhoid or paratyphoid bacilli, I would recommend that in the case of the feces either the method of Gaehtgens or Drigalski-Conradi be employed; in dealing with urine either of these methods or the Endo process may be advantageously used; finally to examine the blood a preliminary culture in the Conradi bile medium

3. Ueber ein Verfahren zum Nachweise der Typhus Bacillen, Centrbl. f. Bakt. Orig., xxxv, 109.
4. Eine Anreicherungsmethode f. Typhus u. Paratyphus Bacillen, Muench. med. Wochschr., 1903, 49.
5. Ueber neue Methoden des Nachweises v. Typhus Bacillen, Hyg. Rundschau, 1904, xiv.
6. Ueber die Erhohung der Leistungsfahigkeit des Endoschen Fuchsinagars durch den Zusatz von Koffein, Centrbl. f. Bakt., etc., xxxix, 5, 634.
7. Ueber Zuechtung von Typhus Bazillen aus dem Blut mittels der Gallenkultur, Muench. med. Wochschr., 1906, 34, s. 1654.
8. Schottmueller Ueber eine das Bild des Typhus bietende Erkrankung hervorgerufen durch Typhus ahnliche Bacillen, Deutsch. med. Wochschr., 1900, xxxii, 511. Also, Weitere Mittheilungen ueber nehrere das bild des Typhus bietende Krankheitsfaelle hervorgerufen durch Typhus ahnliche Bacillen, Ztschr. f. Hyg., 1901, xxxvi, 368. Zur Pathognese des Typhus abdominales, Muench. med. Wochschr., 1902, xxxviii, 1561.

may be made, and then subsequently either of the organisms in question may be identified in case they are present.

One of the most satisfactory methods for differentiating between the colon bacilli and the typhoid and paratyphoid organisms is the modification of Rothberger's[9] neutral red procedure devised by Scheffler.[10] The medium is prepared by adding 0.3 per cent. of grape sugar and 1 c.c. of a concentrated watery solution of neutral red to 100 c.c. of nutrient agar. The medium is sterilized and put in tubes and stab cultures made in the usual way. In from twenty-four to forty-eight hours the medium which before was of a dark cherry red becomes partially decolorized and assumes a characteristic greenish fluorescence if colon bacilli be present; there are also numerous bubbles in the medium produced by the liberation of gases from the sugar which it contains. Exactly similar changes are produced by both types of the paratyphoid organisms. The typhoid bacillus grows in this medium, but neither decolorizes it nor produces gas.

OTHER METHODS OF DIFFERENTIATION.

Among the other methods that have been devised for the purpose of differentiating colon from typhoid bacilli after isolation may be mentioned the following as of most importance: Escherich[11] first called attention to the fact that the colon bacillus coagulates milk—a property which it does not share with either the typhoid or paratyphoid organisms. Another important differential test was that devised by Chantemesse and Widal,[12] who showed that the colon bacillus ferments lactose, with the production of gas, while the typhoid bacillus does not do this. Schottmueller's paratyphoid bacillus A resembles in this particular the typhoid organisms, while the type B, like the colon bacillus, disengages gas. Petruschky's[13] litmus whey is likewise very serviceable in separating the colon from the typhoid bacillus, the former organism producing acid and changing the color of the medium red.

A modification of the last two tests devised by Wurtz[14] is convenient; it is based on the fact that no gas or reddening of the medium occurs when the typhoid bacillus grows in litmus-lactose-agar, while both of these results occur during the development of the colon bacillus. Paratyphoid bacillus B produces more or less gas in this media. As has been long known, the formation of indol in albuminous media is highly characteristic of the colon bacillus, while this substance does not result from the growth of the typhoid organism; the paratyphoid in this respect resembles the typhoid bacillus. Erdmann and Winternitz[15] have shown that proteinchrom is produced by the typhoid bacillus in media containing albumins, but this substance does not result from the growth of the colon organism. Just one-half of the paratyphoid bacilli isolated by us produced this substance.

From the foregoing one inexperienced would certainly be led to the conclusion that the differentiation of typhoid from colon bacilli was comparatively an easy matter, but, multiply our tests as we will, there is unfortunately no absolutely certain method by means of which this result can always be accomplished.

PATHOLOGIC ANATOMY.

It is greatly to be regretted that no opportunity permitted the postmortem study of the bodies of those dying of "slow fever," and I am, therefore, not in a position to speak as regards this most important matter. I can only call attention to the fact that in a considerable proportion of cases the spleen was obviously enlarged and that in some instances the lymph nodes were increased in size. In a few cases rose spots were present. These facts certainly tend toward the assumption that this so-called "slow fever" is certainly, in many instances, typhoid, with its well-known pathologic anatomy.

SYMPTOMATOLOGY.

As the primary object of this investigation was, if possible, to determine the etiology of "slow fever," no systematic attempt was made to study the symptomatology of the disease. It was, however, necessary to go into the clinical side of the matter sufficiently to determine that the cases under investigation were true examples of the affection in question. It is not pretended that the symptoms hereinafter enumerated furnish an accurate and clear picture of the malady throughout its course, but is believed that the principal and most striking clinical phenomena are given. Of the forty-five cases studied records were not obtained in all instances concerning the clinical details; this accounts for discrepancies that otherwise might be puzzling.

In 13 cases the onset of the disease was in April, 11 in June, 18 in July and 2 in September; 36 of the patients were white and 8 were negroes; 23 were males and 21 females; 44 were Americans, and 1 a German; 4 were under ten years of age, 12 from ten to twenty, 13 from twenty to thirty, 5 from thirty to forty, 2 from forty to fifty, and 2 from fifty to sixty years of age; 11 were farmers, 10 school children, 6 laborers, 6 housewives, 3 children, 2 school teachers, 1 a cook, 1 a travelling man and 1 a bookkeeper.

Five of these patients had previously had "slow-fever", 3 typhoid, 10 malaria, and 20 declared that they had previously had no fever of any kind. In 12 instances the disease was ushered in by a chill. Headache was observed in 37 cases, and pain in the limbs and back in 38 in the earlier stages of the disease. The appetite was good in 14 cases, and poor in 27. Constipation was present in 18, and diarrhea in 10; in 12 the bowels were regular. Distension of the abdomen and tenderness in the right iliac fossa was present in 17 cases. Nosebleed occurred 6 times.

The fever had varied up to the time of observation from 99.2 F. to 106.6 F. The temperature seemed as a rule to be decidedly higher in the earlier stages of the disease than is the case in typhoid. It did not appear to rise in the beginning and recede at the end in the gradual manner so characteristic of the classical form of the latter disease. The fever was in most instances continual, but showed regular remissions at some time during the twenty-four hours. In six cases intermissions were observed, these usually being present either in the beginning or toward the end of the attack. Rose spots were found in 7 cases. In 20 instances nervous symptoms were more or less pronounced. The heart, and curiously the lungs, also appeared to be normal in every case examined. The spleen was enlarged in 24 cases, and there was more or less general swelling of the lmyph nodes in 23 instances. The liver appeared to be somewhat enlarged in 11 cases.

Stained preparations of the blood by the Romanowski method were made in every instance, and not in a single case was the malarial parasite found. In 18 instances the hemo-

9. Differential diagnostiche. Untersuchungen mit gefaerbten. Naehrboden, Centrbl. f. Bakt., etc., xxiv, 513; xxv, 15, 69.

10. Das Neutralrot des Hilfsmittel zur Diagnose des Bacterium coli, Centrbl. f. Bakt., etc., xxviii, 199.

11. Beitr. zur Kentniss der Darmbacterian, Muench. med. Wochschr., 1886, i, 43.

12. Recherches sur le bacille typhique et l'etiologie de la fievre typhoide, Arch. de phys. normal et patholog., 1887, ix, 217, 300.

13. Bakterio chemische Untersuchungen, Centrbl. f. Bakt., 1889, vi, 625, 657.

14. Note sur deux caracters differentiels entre le bacille d' eberth et le bacterium coli commune, Arch. de med. exper. et. D'anat. path., 1892, iv, 85, 383.

15. Ueber, das Proteinchrom eine klinische u. bakteriologisch bisher nicht verwertete Farbenreaction, Muench. med. Wochschr., 1903, xxiii.

globin was estimated; the figures ranged from 60 to 100 per cent; the amount of hemoglobin was not entirely dependent on the stage of the disease, as it was found to be very low in several cases during the first week of the disease.

In only 1 case were the leucocytes counted, the number being 7,800 to the cubic millimeter. The average of differential counts in 11 cases is as follows: Small lymphocytes, 17.7 per cent; large lymphocytes, 9.4 per cent; polymorphonuclear, 71.6 per cent.; eosinophiles, 1.3 per cent. Agglutination tests were positive in only 12 cases.

In 1 case the malady was complicated by a phlebitis in the leg, and in another deafness and nervous symptoms followed the disease. Death occurred in 2 cases.

It is noteworthy that so far as could be judged from our investigations—irrespective of the bacteriologic findings—the cases studied were essentially alike from the clinical standpoint. The instances in which paratyphoid bacilli were isolated appeared to be in every way as severe as those in which the typhoid organism was obtained; indeed, the percentage of death in the cases studied was even greater, there having been one fatal result out of nine cases of paratyphoid and one out of twenty-three of typhoid.

It is of interest to note that only three of the patients received their water supply from artesian wells, all the others obtaining it from surface sources. In every case but one the houses in which the patients lived were unscreened, these being uniformly swarming with flies, and in many instances mosquitoes also were present in great numbers.

PROGNOSIS.

The prognosis in "slow fever" is generally conceded to be better than in typhoid, and I believe there can be no reasonable doubt that this assumption is correct. The fact, in a large measure, furnishes the basis for the commonly-expressed opinion among southern physicians that "slow fever" is a distinct and separate disease. The mortality in our series of cases is certainly lower than is usually observed in typhoid fever, but, of course, from such a small number of instances of the disease no general conclusions could be drawn.

DIAGNOSIS.

The first thought that always arises in the southern physician's mind when he is called to see a case of fever is: Can it be malaria? He does not depend on the microscope for an answer to this question, but promptly administers large doses of quinin. If the patient responds to this treatment he justly regards the affection as being of malarial origin, but if, on the other hand, no effect is produced he will call it typhomalarial, "slow," or typhoid fever, depending on his preconceived ideas as to the real character of the disease we are studying. Practically, then, it may be said that we may include in the category of "slow fever" all of those instances of hyperpyrexia not responding to quinin, for which no anatomic basis can be discovered and which continue from one to ten weeks.

Of course an examination of the blood for the malarial parasite is of much value, but it should not be forgotten that in those regions where this fever is most common the usual type of malaria is the estivoautumnal, in which it is oftentimes a matter of great difficulty to discover the parasite. Unfortunately the Widal test, even when carried out with the paratyphoid organism, is extremely untrustworthy in this type of fever, it being, indeed, so much so that I am not inclined to lay any particular stress on it.

TREATMENT.

I have had no great experience in the treatment of this disease, but I think everything warrants the opinion that it should be looked after just as is typhoid, a view which I believe I share in common with the majority of southern practitioners. It should be mentioned, however, that many excellent physicians employ large doses of quinin throughout the course of the disease, with the belief that its course is thereby shortened.

DISCUSSION.

DR. J. A. WITHERSPOON, Nashville, Tenn., said that Dr. Harris' description of the continued fever of southern Georgia does not tally with that seen in the sister state. They have not, in a bacterial way, been able to determine its exact nature. They know that clinically it seems neither typhoid nor malaria. The fever does not respond to quinin, and the plasmodium is not found in the blood. It rarely shows a tendency to respond to the Widal reaction; occasionally the motility ceases, but there is certainly no clubbing together. Clinically Dr. Witherspoon drew some marked distinctions. In the first place there is commonly seen in the South a fever called "toxenteric," and this does not begin like typhoid or malaria. The patient may be taken with a chill, but the fever rapidly reaches its height. One condition always present is the very rapid prostration; the patients are weak from the start. The facies is stupid, a lethargic type of expression being present. The patient is fussy, irritable and, at all times, wide awake. The tongue is not that of typhoid or malaria; it is pale, small, not tremulous and is never dry unless made so by bad feeding or medication. The pulse is not slow as it is in the first week of typhoid fever; it is rapid from the start. The abdomen is not tympanitic unless made so by bad treatment; it is scaphoid. There is no tenderness in the right iliac fossa, but here is tenderness more often found in the bowel, usually over the seat of the sigmoid flexure. Diarrhea rarely is present except when caused by medication. Constipation is usually present with hard scybalæ. Again the disease does not seem to be influenced by the season of the year; it appears at all seasons. Nor does one attack prevent another; there is a tendency to repetition of the attacks, and one man had six attacks of the fever. The slightest thing appears to cause a relapse; any slight error in diet will cause it. Bathing or sponging, which is so grateful in typhoid fever, in this disease brings about sharp recurrence of the chilly sensations which are exceedingly uncomfortable to the patient. These patients are constantly hungry. A thing of particular importance is the rapid change in the temperature chart. The temperature may be 105 at 8 o'clock in the morning, 101 or 102 at 10 o'clock, and at dark 101. It is a fluctuating temperature like that of a septic type of fever. There is the cold and clammy skin and profuse sweat. This is the fever that occurs in the South more frequently than any other, either malaria or typical typhoid fever. Whether or not it is an atypical typhoid fever Dr. Witherspoon can not say. None of these patients dies unless treated too much.

DR. EDWARD J. WOOD, Wilmington, N. C., said that he sees many cases of extremely mild typhoid fever, closely resembling the fever described by Dr. Witherspoon. This fever runs a course of from three to six weeks, often with no diarrhea or tympanites, but there is always a positive Widal reaction. Many times these cases go undiagnosed, and few would ever be considered typhoid were it not for the blessing of an occasional hemorrhage. Often the mildness of the infection is a misfortune, as it is hard to convince the people that it is really typhoid, hence the difficulty in carrying out proper hygienic precautions. This danger of epidemic is enhanced by the lack of any system of sewage, and by the surface well, which supplies the drinking water. This well is usually close to the closet. It is difficult to determine the relation of malaria to the atypical fevers, as the people take quinin so constantly and the organism can not be found in the peripheral blood, as a consequence. It is a good rule that a fever of this type that does not respond to quinin, properly administered, in from five days to a week, may be safely considered typhoid.

DR. JOHN A. LICHTY, Pittsburg, said that since his practice is in Pittsburg, a place that all know has more typhoid fever cases than any other city in the union, he believes that he can speak with some experience. It seemed to him that Dr. Witherspoon pictured cases in the South that he has had, with the same symptoms, and in which was found the Widal reaction, and which he called typhoid fever. One of the greatest stumbling blocks to students leaving the medical schools is that diseases do not run typical courses. In Pittsburg there are these atypical cases of typhoid fever, the same that are found everywhere, cases with rapid pulse, unusual condition of the tongue, and yet physicians do not hesitate to call them typhoid. They do not have malaria in Pittsburg, therefore, these are not malarial.

DR. ALEXANDER LAMBERT, New York, asked if Dr. Harris made blood cultures in that type of fever during the first ten days; it has become a routine measure at Bellevue Hospital to make a blood culture in fevers suspected to be typhoid. The positive blood cultures obtained are surprisingly great, above 90 per cent., especially during the first ten days. The Widal reaction is an excellent aid if positive; if negative at the time it was first being made, diagnosis must depend on other symptoms as it did years ago before the reaction was known. Dr. Lambert believes the blood culture to be an accurate and useful method of diagnosis in doubtful cases, especially during the first ten days.

DR. MILTON H. FUSSELL, Philadelphia, said that the cases reported by Dr. Harris could not be malarial if no malarial organisms are present. Blood cultures will appear positive in at least 73 per cent. of cases of typhoid. He has never practiced in the South, but to say that typhoid fever exists there in various forms is sufficient to make southern practitioners endeavor not to allow the disease to be spread. The term "typho-malarial" is a sheet to cover ignorance and should be abolished. Ninety per cent. of the cases diagnosed as "typho-malaria" in the soldiers in the Spanish-American War were true typhoid fever. To be sure, malaria and typhoid fever may exist in an individual at the same time, but the term "typho-malarial fever" ought to be excluded.

DR. H. F. HARRIS, Atlanta, Ga., said that he was satisfied that the commonly accepted view is erroneous that this so-called "slow fever" is an exceedingly mild disease. He is equally certain, however, that it is not so severe as is typhoid fever in the northern portion of the country, where he had had an abundant opportunity of observing it in the past. The view that "slow fever" is very rarely fatal arises from a not unnatural tendency of the physician to forget the real facts. Since a hundred cases are seen during the course of perhaps four or six years and as probably not more than five or six patients die, the physician who keeps no records would almost inevitably have a strong tendency to minimize the dangers attending the malady. It is also true that many physicians consider the severe cases terminating in death as typhoid, and consequently these are not reckoned among the cases of "slow fever." Typhoid organisms were isolated from the blood in six of the cases and paratyphoid in one. More frequent success would have been obtained had it not been that the patients were, as a rule, exceedingly ignorant and much opposed to the abstraction of blood in sufficient quantity. Dr. Harris said that, after Conradi's ox bile method was published he was more insistent in the endeavor to obtain blood for diagnostic work, but the ignorant opposition of the patients generally prevented.

Floating Kidneys.—A remarkable communication has been made recently by Dr. Hector Mackenzie to the Medical Society of London regarding floating kidneys. It is stated, that among 2,801 females of all ages, who were examined, 516 had distinctly movable kidneys, while among 1,607 males only 11 were found to have this mobility. The most interesting point brought out in regard to this condition was, however, that out of these 515 females, whose kidneys were of this vagrant nature, 411 did not even know that they possessed erratic kidneys. It must be concluded, therefore, that slight mobility of the kidneys is no such serious condition as many medical writers have led us to believe.

GONOCOCCUS INFECTION AS A CAUSE OF BLINDNESS, VULVOVAGINITIS AND ARTHRITIS.*

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CAUSE OF BLINDNESS.

The most important of the causes of blindness with which we have to do is that resulting from a gonococcus infection of the eyes of the child at birth. Important—first, because it is the most common cause of blindness; second, because it affects the young child and a long lifetime of blindness may follow; and third, because it is preventable and curable in practically every case receiving proper care, and because it is one of the most dangerous maladies to vision when treatment is neglected or delayed.

It is a veritable world plague. It occurs everywhere and no country has yet succeeded in getting it completely under control. So widespread is blindness resulting from it that Magnus, who has made careful statistical studies concerning it, says that out of 2,528 cases, of all ages, of complete blindness in Germany 10.88 per cent. were due to this cause.

In institutions the proportion is much larger. A committee of the Ophthalmological Society of the United Kingdom in 1884 estimated that about 30 per cent. of the persons concerned have lost their sight through the ophthalmia of the new-born. While in Mexico ophthalmia neonatorum is said by Ramos to be the common cause of blindness and 4,500, or 30 per cent., of the whole number are blind as a result of this preventable disease.

In the New York State School for the Blind 39 out of 149 pupils lost their eyes from ophthalmia neonatorum, which is a rather smaller proportion than that found in institutions elsewhere. In the state of New York more than 600, now hopelessly blind from this cause, might have been spared this dreadful calamity had simple prophylactic measures been employed at the day of their birth, while in the United States there are between 6,000 and 7,000 people who have been blinded by this disease.

This is a disease dependent on an infection finding an entrance in the eyes of the child at or immediately after birth. Stephenson has shown that about two-thirds of all cases of ophthalmia in newly-born babies are due to the micrococcus of gonorrhea.[1] If the eyes are carefully cleaned at once so that the infected secretion does not get within the lids, or if the germs be washed out with a simple solution before they have time to multiply, or if the virility of the microbes be destroyed by a solution which is in itself harmless in its effect on the eyes, the disease will not develop. But as one can never be sure that in inexpert hands the washing is complete and thorough, and as it is not easily performed, the latter method, in every suspected case at least, should invariably form a part of the toilet of the child.

As this disease occurs in about 0.5 of 1 per cent., or one in 200, of all births, and as the total number of births registered for 1906 in New York was 183,012, the frightful prevalence of the disease can be readily estimated.

It should be the purpose of the profession, therefore,

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Ophthalmia Neonatorum, Its Etiology and Prevention, Trans. Obstet. Soc. of London, 1905, xlv.

to find and make known some agent which may be used by every one who attends a case of labor, and to this end a committee of the American Medical Association, by means of a series of questions sent out in circular form, has endeavored to determine the most efficient and most popular method.

As a member of this committee I sent out a large number of circulars to obstetricians throughout this country relative to the prophylactic use of silver nitrate in these cases. The number of physicians replying was 113. Of these, 103 think that a solution of nitrate of silver is the most effective drug for the prevention of this disease, as well as the most inexpensive. In view of the fact that a 2 per cent. solution occasionally causes "silver catarrh" and that a 1 per cent. solution rarely does so, 94 thought it safer and better to select this percentage for recommendation.

In addition to these replies a number wrote personal letters, from which I shall abstract the most important points:

Seven physicians prefer argyrol and protargol in solutions of from 5 to 25 per cent. Four prefer boracic acid solution, one announced himself in favor of sterile water and one other uses saline. Still another prefers boracic acid or salt, but thinks it dangerous to teach to medical students and the general profession. Four physicians think that the choice of method should be left to the physician in charge of the case. Three would make it compulsory for almshouses, hospitals and dispensaries, but not for private cases. The 2 per cent. silver nitrate solution was preferred by three. One goes on record as saying that he does not consider silver nitrate a prophylactic in all cases; another asserts that the vaginal canal always contains bacteria.

Incidentally, in reply to the proposition that a law be passed in each state securing the distribution through the various state health boards of small, sealed, inexpensive, light-proof tubes or ampules of the selected solution to be sent gratuitously to every physician and midwife on the passage of the law, and subsequently when required, or on filing of each birth certificate, 97 replies were in favor of such a law, 11 against it, and 5 were uncertain as to its advisability. Of the 11 opposing, 3 were not in favor of laws compelling physicians to perform an obvious duty.

In answer to the proposition that it shall be required by law that the birth certificate shall contain a statement signed by the accoucheur that some recognized procedure specified on the blank had been used in each eye of the newly-born on the day of birth, as a preventive of ophthalmia neonatorum; in the absence of this statement, should ophthalmia neonatorum develop and the child lose the sight of one or both eyes, the accoucheur, whether physician or midwife, filing the certificate, shall be deemed guilty of criminal negligence, and shall be subject to such penalty as the state may exact, 80 were in favor of such a law, 24 opposed, 5 were undecided and 4 made no reply. It was remarked by 5 that this was too drastic a procedure; one considered the proposition none too strong; 5 remarked that it would bring physicians into trouble through damage suits; one thought it applicable for midwives and not for physicians.

In answer to the proposition that it shall be the duty of the state health officers to place ophthalmia neonatorum on the list of communicable diseases, and failure of the attendant to report to the local health board each birth, the existence of ophthalmia neonatorum when present, and the fact that some prophylactic has or has not been used, shall be considered a misdemeanor, and subject the offender to such penalty as the state may exact, 91 favored such a proposition, 16 were opposed to it, 2 were undecided, and 4 did not answer this question.

In answer to the proposition that it be strongly urged if the above program meets with general approval, that the president of each state association be invited to appoint a committee on ophthalmia neonatorum whose duty it will be to collaborate with the state board of health in securing in the several states the enactment and enforcement of laws embodying the above proposition, 97 were in favor, 9 against, and no answer was received from 7.

The conclusions from a study of these replies make it certain that silver nitrate as a 1 per cent. solution is preferred by obstetricians in the United States in a position to judge of the merits of the various measures employed.

An important objection to Credé's method is that it tends to increase eye morbidity by causing "silver catarrh." This has led to the use of argyrol and protargol. Zweifel uses the former and neutralizes with sodium chlorid. His morbidity in over 5,000 cases has been but 0.25 per cent. Scipiades finds argyrol a certain prophylactic. From a number of other clinics come equally good reports as to protargol. Not only were the results less favorable, but more silver catarrh was caused by Zweifel's method than by any other single procedure. Hence at the Hofmeier clinic Credé's 1 per cent. silver nitrate is regarded as the best prophylactic.

My faith in the prophylactic power of the nitrate of silver method is so strong that I attribute all apparent negative or ill effects of the method to the presence of antepartum infection of the eyes, to unskilled application, or to improper or inert solutions.

The work detailed in this paper was performed for the purpose of determining if possible what strength of silver nitrate solution might be safely entrusted to the hands of students and midwifes for the purpose of instilling into the eyes of the new-born in order to prevent ophthalmia neonatorum.

The work of testing the germicidal effect of various strengths of silver solutions on the gonococcus was undertaken for me by Prof. James Ewing of Cornell Medical College. He assigned the task to Dr. John C. Torrey, one of his staff, the work being done in the Loomis Laboratory. Our thanks are expressed to both Drs. Ewing and Torrey for the complete report which here follows:

Tests of the germicidal effect of 0.5 per cent., 1 per cent. and 2 per cent. of silver nitrate on gonococcus were made. A culture of gonococcus on ascitic agar twenty-four hours old was used in the tests.

1. Three drops of this growth was emulsified in five drops of sterile distilled water. To this was added 6 c.c. of 0.5 per cent. silver nitrate (solution distinctly clouded thereby). One large drop of this was transferred to 15 c.c. ascitic broth tubes at the following intervals:

Tube.	Interval in seconds.	Result after 24 hours.
Series I.—With 0.5 Per Cent. Silver Nitrate.		
1	15	No growth. Negative.
2	30	No growth. Negative.
3	45	No growth. Negative.
4	60	No growth. Negative.
Series II.—With 1 Per Cent Silver Nitrate.		
5	15	No growth. Negative.
6	30	No growth. Negative.
7	45	No growth. Negative.
8	60	No growth. Negative.
Series III.—With 2 Per Cent. Silver Nitrate.		
9	15	No growth. Negative.
10	30	No growth. Negative.
11	45	No growth. Negative.
12	60	No growth. Negative.
Series IV.—Control. Distilled Water (Sterile) in Place of Nitrate Solution.		
13	15	Growth positive.
14	60	Growth positive.

From these experiments it would appear that silver nitrate in 0.5 per cent. strength or stronger is quickly germicidal to the gonococcus.

So far as I could learn from careful inquiry at a number of maternity hospitals the general technic was

to drop into the eye several drops of some silver preparation from a glass medicine dropper and shortly thereafter to cleanse the eye with a second solution, such a plain sterile distilled water, boric acid solutions of varying strengths, or physiologic saline solution, but nowhere could I find that a silver nitrate solution was used without immediately applying some other solution to neutralize or wash away the silver salt.

It would seem that it would be a dangerous practice to require the use of a preparation that necessitated after-neutralization, for in the various exigencies of the lying-in room such after-neutralization or cleansing might be neglected or improperly performed and the eyes of a large number not infected with the gonococcus might be injured by the production of a silver catarrh.

Therefore, if a solution which did not require after-neutralization could be supplied a very simple procedure could be inaugurated thus: First, wipe the eyelids with a clean piece of gauze; second, drop into the eye the contents of a receptacle containing the solution. This technic would be simple, and with proper receptacles containing just enough for one eye would be perfectly safe. Furthermore, if it could be shown that some certain solution could be used with equally good results, whether neutralized or not, it would be the ideal solution. Then in case neutralization was neglected the eye would still be protected from infection and no silver catarrh set up. Such a result seems to be found in the use of a solution of 1 per cent. silver nitrate, as is shown in the observations here recorded.

It was for the purpose of trying to find some solution which might be used without after-neutralization, that would prevent ophthalmia neonatorum, and at the same time produce no silver catarrh, that the following observations were made.

The cases observed were in the wards of the Manhattan Maternity Hospital and the Bellevue Emergency Hospital.

The patients were from the average east side tenement house district, some with histories of previous vaginal discharge, some with vaginal discharge on admission and some with neither history nor sign of vaginal discharge.

The technic used in the eyes of the newly-born from these patients was as simple as could be performed. In some cases as soon as the head was delivered, in others after the delivery was completed, with a clean piece of gauze the mucus was wiped from the eye and by means of a medicine dropper one to three drops of the solution were dropped into each eye. This method was followed out with solutions of silver nitrate of one-half of 1 per cent., 1 per cent, and 2 per cent., with the following results:

Solution. silver nitrate per cent.	Subsequent neutralization.	Number children.	Result—Hospital.
1	Boric acid solution.	1000	25 cases mild silver catarrh, longest reaction, 3 days. No ophthalmia. Bellevue Emergency Hospital.
2	Physiologic saline solution.	20	5 cases silver catarrh, duration 2 to 3 days. No ophthalmia. Manhattan Maternity.
0.5	No cleansing of eyes afterward.	35	No cases of silver catarrh, 1 purulent ophthalmia developed on ninth day. Treated argyrol, 35 per cent. Manhattan Maternity.
1	No cleansing of eyes afterward.	20	1 case silver catarrh, duration 2 days. Manhattan Maternity.
2	No cleansing of eyes afterward.	20	6 cases silver catarrh, which yielded to boric acid solution in 2 to 3 days. No purulent ophthalmia. Manhattan Maternity.

One thousand children were treated at the Bellevue Emergency Hospital with a 1 per cent. solution of silver nitrate, and this solution was immediately thereafter neutralized with a boric acid solution. There were no instances of ophthalmia neonatorum in this series. Twenty-five patients, or 2½ per cent., showed symptoms of mild silver catarrh, the longest duration of which was three days.

Twenty children were treated at the Manhattan Maternity with a 2 per cent. solution of silver nitrate and this solution afterward neutralized with physiologic saline solution. Of these five, or 25 per cent., developed silver catarrh lasting from two to three days. No cases of ophthalmia neonatorum.

Thirty-five children were treated at the Manhattan Maternity with an 0.5 per cent. of nitrate of silver, with no after-cleaning of the eyes. No cases of silver catarrh resulted. One case of purulent ophthalmia developed on the ninth day, which was cured with 25 per cent. argyrol solution.

Twenty children were treated at the Manhattan Maternity with a 1 per cent. solution of silver nitrate, with no after-cleaning of the eyes. One patient, or 5 per cent., developed a silver catarrh lasting two days. No ophthalmia.

Twenty children were treated at the Manhattan Maternity with a 2 per cent. solution of nitrate of silver. without after-neutralization. Six patients, or 30 per cent., developed silver catarrh, which yielded to treatment in two or three days. No purulent ophthalmia.

Of those children in which one-half of 1 per cent. of silver nitrate was used the eyes of 97 per cent. were perfectly normal after ten days, with no discharge up to that time. A number of these were from mothers who had a purulent vaginal discharge on entering the hospital. The other 3 per cent. got up a purulent discharge about the ninth days and were then treated with argyrol and cold applications.

Of those cases in which 1 per cent. silver nitrate solution was used without after-neutralization, none of the patients had an after-discharge with the exception of the blonde baby, which type of child appears to be more susceptible to the action of the silver salts than dark babies; at least this is the experience of the last seven years in the Bellevue Emergency Hospital.

In those cases in which 2 per cent. silver nitrate solution was used the result was not so satisfactory. In the few cases tried a large percentage of the children showed signs of severe irritation when the silver solution was not followed by boric acid solution.

The method which has most commended itself to me is the one now in use at the Bellevue Emergency Hospital. It involves but one additional step in the technic, namely, that of following the instillation of several drops of 1 per cent. silver nitrate in each eye by a weak solution of boric acid. This method has been efficacious in several hundred cases, many of the mothers having been previously infected with the gonococcus. From the fact that a 1 per cent, solution may be used without after-neutralization it would be perfectly safe to require the use of a 1 per cent. solution of silver nitrate, with after-cleaning by boric acid, and in the event of carelessness or negligence, even if the boric acid solution was not applied, there would no harm come to the eyes of the child.

VULVOVAGINITIS.

Bacteriology proves the great difficulty of inducing the gonococcus to live outside of its regular habitat.

Nevertheless the gonococcus can be spread by the handling of towels, washcloths, toys, etc. Again it would appear that the vaginal epithelia of the child is more susceptible to infection than that of an adult.

Hence it is that we find gonorrheal vulvovaginitis in young children a common condition, especially where lack of cleanliness exists, as in overcrowded institutions and where proper prophylactic measures are not enforced. The parts affected, in the order of frequency, are the labia, urethra, vagina, cervix and uterus.

Any child with a purulent vulvovaginal discharge should be viewed with suspicion, whether the discharge contain gonococci or not, for at the outset of a gonorrheal vulvovaginitis the purulent discharge is often without gonococci, the epithelial cells being replaced by leucocytes and the gonococci only appearing after several days.

If a vaginal discharge of a child contains exclusively leucocytes without the usual bacterial flora and epithelial cells one should suspect the beginning or end of a gonorrheal vulvovaginitis (Harmsen). Such a child should have a microscopic examination of the vaginal secretion repeatedly made and be kept under observation for one week during the possible period of incubation. Otherwise an insidious onset might be overlooked (Harmsen). No case should be considered cured until two or more examinations of smears show the absence of the gonococcus.

The importance of prompt and energetic treatment of each and every case of specific vulvovaginitis is emphasized by the many and far-reaching complications of the condition to which every such child is liable. These are: 1, Infection of the peritoneum, local or general; 2, adenitis; 3, ophthalmia; 4, arthritis; 5, proctitis.

Loss of sight may occur from the ophthalmia, death from the peritonitis, and possibly, although it is a difficult proposition to prove but a rational one to assume, sterility in adult life may be due to a gonorrheal vulvovaginitis occurring in childhood.

On the other hand, a note of warning should be sounded against attributing to the gonococcus all the tissue changes that may ensue from a specific vulvovaginitis. The gonococcus appears to possess toxic properties which are active after the cocci themselves have disappeared from the secretions.

The severe instances of local, and the fatal ones of general peritonitis, with systemic infection, following a specific vulvovaginitis that have come under my observation, I have been inclined to view as instances of mixed infection, the gonococcus playing only a minor part in the etiology.

ARTHRITIS.

Observation and experimentation prove that gonorrheal arthritis is due to migration of the gonococcus. It appears also that the gonococcus does not flourish in joints as it does in the eye and in the vagina; that in the joint it is rarely found in other than in its acute stages of inflammation, and that it tends quickly to lose its activity.

Gonorrheal arthritis is generally considered to be a rare condition—the least frequent of the three gonorrheal conditions mentioned in this paper—indeed, there are those who even deny its existence, although analyses of several series of cases have been published.

Some years ago as examining physician for the New York Children's Society I had occasion to make over 600 examinations of children for evidences of rape. While gonorrheal vulvovaginitis was common enough in the series, and occasionally an ophthalmia of suspicious character, no case of arthritis came under observation.

It is absurd to consider the treatment of gonorrheal arthritis without first cutting off the source of infection. The urethritis, vulvitis, vaginitis or endometritis must be cured before one can hope for improvement in the joints. Even then the treatment by drugs is most unsatisfactory, and our main reliance is in continuous cold or intermittent dry heat as high as 300 F. or 400 F.

[THE DISCUSSION ON THE SYMPOSIUM OF WHICH THIS IS A PART WILL APPEAR WITH THE OTHER ARTICLES NEXT WEEK.]

A NEW INDICATOR FOR FREE MINERAL ACIDS.*

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The indicator that has been used most generally for the detection of free HCl in the stomach contents is phloroglucin-vanillin, often called Günzburg's reagent. While this test is very delicate, it has the disadvantage that the reagent rapidly deteriorates, which tends to render its use unreliable. In consequence also of this fact it is of little use to the practicing physician who requires it only occasionally. A substitute that I offer is fully as delicate as Günzburg's, easier of application and much more permanent.

Dr. R. L. Emerson of Boston has discovered an indicator for free mineral acids, to which the name of "carminogen" has been given. It is a colorless fluid which, in the presence of free mineral acids, will give, on drying, a carmine color. The solution is practically permanent, if kept in a stoppered bottle. If exposed to the air for any length of time it may turn slightly brown, but this will in no way impair its efficacy. The brown color is very slight, never approaching opacity, as is the case with Günzburg's. Careful control tests have shown that it is fully as sensitive as Günzburg's.

The method of application is the same as with the phloroglucin-vanillin: A drop of the reagent is gently heated in a porcelain dish, and a drop of the solution to be tested is added and evaporated to complete dryness, care being taken to avoid burning or charring. This can best be done over a water bath. A point to be borne in mind is that the color does not appear until all moisture has been driven off. The indicator may be even more conveniently used, especially for office practice, in the form of test papers. These are prepared by saturating filter paper with the colorless solution and drying in the air. Paper so prepared keeps in a small stoppered vial indefinitely without changing color at all. If exposed to the air for any length of time it will darken slightly. The paper is fully as delicate as the solution. The best method of using it is to moisten the paper with a drop of the stomach contents and then to dry the same thoroughly by gentle heat, preferably in a small evaporating dish over a Bunsen flame. Carminogen has the added advantage of costing about one-tenth as much as phloroglucin-vanillin.

This paper may be obtained from Dr. R. L. Emerson, 739 Boylston St., Boston.

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*From the Laboratory of Clinical Pathology of the Harvard Medical School.

*Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

Clinical Notes

A FATAL CASE OF ACUTE INFECTIOUS JAUNDICE (WEIL'S DISEASE).*

ROBERT M. THORNBURGH, M.D.
Captain, Assistant Surgeon, U. S. Army.
COTABATO, P. I.

A review of the literature reveals a very meager knowledge of this obscure disease, but few cases going to autopsy being reported (only ten reported cases could be found), and it is, therefore, deemed worth while to report this case:

Patient.—R. S., white, aged 46, a civilian employé of the subsistence department of the U. S. Army, was admitted Feb. 20, 1906, to the medical side of the Division Hospital, U. S. Army, Manila, P. I.

History.—Born in Maryland in 1860. Had resided in the Philippines for four years. Occupation, butcher in Depôt Commissary, U. S. Army, at Manila, P. I. Had the usual diseases of childhood. Was operated on for hernia six months previously. Family history negative. Shortly before admission he had noticed swelling of the feet and legs, and had suffered somewhat from anorexia.

Condition on Admission.—Slight edema of feet and legs, and patient complained of shooting pains in both calves. Marked icterus, general in character, was observed. The blood examination showed many pigmented leucocytes, but no malarial plasmodia. Urine was negative. Temperature, 99.4 F. A tentative diagnosis of malarial infection, type undetermined, with probable complication of Weil's disease (in view of occupation, icterus and pain in the legs) was made. He was put on quinin, 1 gm. (gr. xv) twice daily, for three days, followed by iron and arsenic. The patient grew steadily better, and on February 26 he was discharged at his own request, stating that he felt perfectly well.

Condition on Readmission.—March 13, 1906, the same patient was readmitted. At this time his temperature was 98.2 F.; pulse, 108, and weak. Slight icterus was present, general in character; the liver and spleen were much enlarged and a blowing systolic murmur was heard at the apex. The laboratory examinations of the blood, urine and stools were negative. The patient was irrational, suffered from pain in the legs and hip joint, and complained of partial blindness.

March 15. His mind was much confused; he said that he could not see. Had delusions that his bed was charged with electricity and that there was an electrical machine on top of him. Temperature, 98.4 F. and pulse, 96.

March 16. He complained of great weakness and could scarcely see. At 11:30 p. m. he complained of feeling cold; the pulse was very weak; he was bathed in a cold sweat and had marked dyspnea. His condition rapidly grew worse during the night.

March 17. The pulse was very weak and irregular and the breathing labored. Tetanic movements of the arms and body commenced and continued to a greater or less degree until death. The patient was delirious all night.

March 18. The patient was much weaker and complained of severe pain in the right leg. He could not retain anything in his stomach during the morning, but later took albumin water, milk, tea, and stimulants. At 2:15 a. m. he was catheterized, 45 c.c. of urine being obtained, which was negative, on examination, for albumin.

March 19. The patient had grown progressively weaker, the breathing being very difficult, and he apparently suffered from great pain in the right hip. Involuntary defecation at 1 a. m. Feces were normal in appearance. Hiccoughed at intervals all night. Temperature, 101.2 F. in axilla, pulse 118, and respirations 24, at 6 a. m. The patient passed the urine and feces involuntarily during the day, and vomited dark green fluid several times during the night, which had a very offensive odor. The pulse was rapid and irregular all night.

March 20. At 8:15 a. m. the patient died, the temperature at the time of death being 105.4 F. in the axilla.

Treatment.—The treatment was symptomatic, consisting of arsenic, potassium iodid and stimulants. Adrenalin, strychnin, and atropin were administered as indicated, but no treatment appeared to influence his condition in the least.

For the following report of the autopsy I am indebted to Dr. Charles F. Craig, First Lieutenant, Assistant Surgeon, U. S. Army, Manila, P. I.:

Autopsy.—This was held two hours after death. Body was that of a well developed man, apparently 40 years of age. Considerably emaciated; rigor mortis slight; skin lemon-yellow in color; conjunctivæ bright yellow, pupils dilated and equal. Postmortem discoloration marked over dependent portions of the body. Examination of the brain showed nothing abnormal save some congestion of the dura mater. The amount of subcutaneous fat was increased and the fat very soft and bright yellow in color. The muscles appeared normal.

Thorax.—On opening the thoracic cavity the pleura was found normal and no fluid was contained in the cavities. The lungs externally appeared congested and a few small ecchymoses were noticed beneath the pleura at the base of the right lung. On section the lungs appeared normal save for marked venous congestion.

Heart.—The pericardial cavity was found distended with clear, dark yellow fluid, but both layers of the pericardium appeared normal. On section of the heart the muscular tissue appeared normal, and all the valves were found to be normal. The heart was slightly hypertrophied. The amount of extracardial fat was increased and the fat was deeply bile-stained.

Abdominal Cavity.—The abdominal cavity contained about 500 c.c. of clear, bile-stained fluid. The greater omentum contained a large amount of fat of a dark yellow color. The mesenteric glands were not enlarged.

Liver.—This organ reached about 8 cm. below the border of the last rib, and appeared greatly hypertrophied. Its consistence was decreased. Externally it presented a pale yellow color; the capsule was smooth; the gall bladder dilated with bile of a dark olive green color. On section the mucous membrane of the gall bladder was found thickened and congested. On section of the liver the cut surface was orange yellow in color and in some regions the tissue was so much bile-stained as to be almost black; the lobules were very indistinct and there was marked fatty degeneration present, especially in the right lobe; in some places there was intense venous congestion.

The Spleen.—The spleen was almost three times its normal size, dark purple in color externally, with a smooth, distended capsule. On section the consistence was very greatly reduced, the cut surface being almost diffluent, of a dark mahogany color, with marked pigmentation present in irregular areas. The pancreas appeared normal save for intense congestion.

The Kidneys.—The kidneys externally appeared somewhat congested, dull red in color, with a smooth capsule, beneath which, here and there, could be seen minute hemorrhagic areas. On section the cut surface appeared slightly congested, the cortex and pyramids were distinct, and the cortex of normal thickness. The capsules were not adherent. The suprarenal glands appeared normal. The bladder appeared normal, both externally and internally.

The Intestines.—Externally the intestines appeared normal. On section the mucous membrane of the duodenum was greatly congested and in places there appeared to be slight necrosis of the summits of the folds. The jejunum appeared normal, but the ileum was greatly congested throughout and covered with bile-stained mucus. The large intestine appeared normal.

Microscopic Examination.—Sections were cut and stained of the liver, spleen, heart muscle, and kidneys. The sections of all of the viscera mentioned showed the lesions common to great venous congestion, and the liver, heart muscle, and kidneys showed fatty degeneration. In the liver the fatty changes were most marked, whole lobules being replaced by fatty granules, while in others the fatty degeneration of the liver cells was only visible at the center of the lobule; the portal spaces presented a marked small-celled infiltration, and minute hemorrhagic areas were present throughout the sections. In places

* Published with permission of the chief surgeon, U. S. Army, Division of the Philippines.

where fatty degeneration had not occurred, the liver cells were undergoing marked albuminoid degeneration. The principal microscopic lesions presented in the sections of the spleen were those of intense venous congestion, together with marked pigmentation, the nature of which appeared to be malarial. No plasmodia were found in smears from the spleen, however. The kidneys presented the lesions of albuminoid and fatty degeneration, and of venous congestion. There was but little evidence of nephritis in any form, only very small areas showing any desquamation of the epithelium, and the fibrous tissue of the organ was not increased in amount. In places the intense engorgement of the blood vessels had lead to their rupture and the formation of small, irregular hemorrhagic areas. The sections showed but little fatty degeneration, compared to the liver, but there was a marked general albuminoid degeneration. Sections of the heart muscle showed a slight degree of fatty degeneration. The principal pathologic lesions present were fatty degeneration, albuminoid degeneration, venous congestion and hemorrhages into the various viscera.

Bacteriologic Examination.—During life, cultures were made from the blood of the patient and from the urine and stools, and at autopsy cultures were made from the heart's blood and from the spleen. The cultures were all negative as regards any organisms which could be regarded as of etiologic importance. The *Bacillus proteus fluorescens* was not isolated in this case.

Weil's disease (acute infectious jaundice) first described by Weil in 1886, is so rare comparatively, especially when a fatal result follows, and so few postmortems have been had, that the above case is presented with the hope of adding some small contribution to the scant literature of the disease.

The etiology is obscure. The point on which all authors agree is that the disease is essentially an "occupation disease." Those who appear to have been most frequently affected have been butchers, sewer cleaners and others whose occupation has brought them into contact with decaying organic matter. It has been found in Europe in garrisons and prisons, but thus far but one case has been reported in the United States and none in the Philippine Islands.

From the study of the above case it would appear that a definite infection had taken place from the handling of frozen meats, thus proving that a putrid condition of meat is not a necessary etiologic factor. The patient had entirely recovered from his first mild attack and returned to his work—that of cutting up frozen meat for issue and sale to the Army. There is none other than frozen meat kept in the cold storage warehouse, and his work was entirely with such meat. It is probable that his hands became soiled and washing was neglected, but even so putrefaction could hardly proceed to any great degree before the close of working hours and the necessary hand-washing on quitting work. This fact would lend support to the theory that the infectious cause may be present in dead organic matter that has not as yet advanced to so-called decay. Another point evinced in this case is the suggestion of infection through the skin instead of through the alimentary canal, as formerly supposed. The latter mode can not positively be ruled out in this case, neither can the possibilities of infection through the air passages, but the most likely mode in this particular instance appears to be through the skin.

Although Jaeger, Conradi, Vogt and others[1] have isolated a *B. proteus fluorescens* from the urine and stools, it possibly may be regarded as a coincidence rather than a causative factor. In the case here recorded blood cultures were made and cultures from the stools and urine, but nothing resulted from the work done along this line.

Whether in this case two distinct infections occurred or whether the second attack was merely a relapse can not positively be stated. The condition of the patient was so good after the first attack that the inference of a second more severe infection is perhaps tenable.

1. Gyn: Reference Handbuch of Med. Sciences, viii, 302.

SUMMARY.

1. The disease can be acquired by handling frozen meat, hence, decomposition is not a necessary etiologic factor.
2. The pathologic anatomy is not conclusive as to etiology or cause of death.
3. In a severe case treatment is of no avail.

DEATH FROM RESPIRATORY PARALYSIS FOLLOWING HYOSCIN-MORPHIN-CACTIN ANESTHESIA.

B. F. VAN METER, M.D.
LEXINGTON, KY.

Patient.—J. H. E., male, white, aged 51, was seen by me in consultation with Dr. G. M. Centers, Hazelgreen, and Dr. J. A. Stucky, Lexington.

Family History.—Mother and father living and in good health. Two sisters and one brother living and in good health. One sister dead; cause of death unknown. No history of malignant growth in family.

Personal History.—Patient was a bookkeeper and clerk. Married. Up to one year previously had always enjoyed good health. Drank whisky to excess. Present illness began one year before I saw him with an attack of tonsillitis. After the attack he noticed an enlargement at the angle of the left jaw. This increased slowly in size until two months previously, when it grew rapidly and caused a great deal of pain, for which morphin was given; at the time I saw him he was taking one grain of morphin daily.

Examination.—This showed a tumor, apparently of the parotid of the left side, somewhat smaller than a lemon and apparently slightly movable.

Diagnosis.—A provisional diagnosis of sarcoma of the parotid was made and an exploratory operation advised as it was believed that the condition was operable.

Operation.—The family physician, Dr. G. M. Centers, asked permission to use the hyoscin-morphin-cactin anesthetic, as manufactured by Abbott, saying that he had used it and thought it safer than ether and more convenient with the case in hand. I told Dr. Centers that I was ignorant of the use of that particular combination, but that if he would give it I would consent. Patient had been purged thoroughly the day before. One ounce of castor oil was ordered. Dr. Centers gave one tablet of the H. M. C. at 5 a. m., followed by one at 6:30 a. m., and a third tablet at 8 a. m. The patient was ordered to the operating-room at 8:30 a. m. The castor oil given the night before had not acted. An enema was given, which was partially retained. At the beginning of the operation patient was somewhat cyanosed, breathing deeply, 12 to 14 times a minute. Pulse rate, 64, full and strong. As the incision was made through the skin the patient roused up and was given a few drops of chloroform. This was repeated two or three times during the operation. A straight incision was made and the glands exposed. It immediately developed that it was not sarcoma but tuberculosis of the lymph gland within the parotid. A line of cleavage was readily found—the tubercular gland removed *en masse*, with comparative ease. The facial nerve and external carotid artery were not injured. No attempt was made to remove the parotid. There was practically no hemorrhage. The wound was closed by interrupted stitches, without drainage.

Postoperative History.—Patient left the operating room apparently in about the same condition as when he went on the table, still slightly cyanosed. Nurse was directed to give him

water if he asked for it, and I said that I would see him a few hours later. The nurse's report states that there was no change in his condition until 12:15 p. m., exactly two hours after he was returned to bed, when he very suddenly ceased breathing and became markedly cyanosed. Immediately before this the patient's respiration as counted by the interne and nurse was ten. Artificial respiration was resorted to and continued for fifteen minutes, without any result. He was given a hypodermic of 1/20 of a grain of strychnin. The patient did not rally, however, dying apparently from paralysis of the respiratory centers.

Autopsy.—Postmortem examination was held the following night. Kidneys and heart normal. Right lung showed a good many healed tubercular nodules. Left lung also showed a few healed tubercular deposits. Bronchial lymph nodes showed the effect of an old tubercular infection. The dura was somewhat thickened and slightly adherent. Brain, normal. Arteries, soft and in good condition. No evidence of cause of death. Conclusion: Death probably due to paralysis of the respiratory centers.

124 Second Street.

TRAUMATIC RUPTURE OF THE JEJUNUM.

A. P. HEINECK, M.D.
CHICAGO.

History.—C. H., aged 38, a circus acrobat, was admitted to the Cook County Hospital May 23, 1907, at 5:30 p. m. One and a half hours previously the horse which he mounted had reared and crushed him between the horn of the saddle and a brick wall. He was vigorous, robust, and of athletic build, and previously had always been healthy. There was no history of previous intestinal disturbance. On admission his pulse was 60, temperature 97.4 F. and respirations 20; he was suffering considerable abdominal pain and complained of feeling cold. He vomited a large amount of brown liquid which did not have a fecal odor. The vomiting was repeated several times throughout the night. During the night the patient was restless, unable to sleep and continued to be very nauseated. On admission the tenderness and muscular rigidity were most marked over right upper quadrant of abdomen, but at no time or in any place did the adbdominal wall show any evidences of contusion. Operation was urged, but the patient declined. On the morning following the day of admission the patient's condition being so evidently worse, the pain almost agonizing, the nausea and the vomiting continuing, an annoying hiccoughing having set in, and the abdominal distension becoming marked, he consented to operative intervention, which at the time seemed to afford him only slight chances of recovery.

Operation.—An incision 3 inches in length was made slightly to the right of the middle line, about equally supra- and infraumbilical. The peritoneal cavity contained seropurulent fluid and undigested pieces of meat and potatoes. The peritoneum, both visceral and parietal, and omentum showed signs of inflammation. The intestines were covered with fibrin. There was a rupture of jejunum about 1 cm. in diameter near the antemesenteric border with eversion of the intestinal mucous membrane. The rupture was closed by inverting into the gut-lumen the prolapsed portion of the gut-wall by the aid of a circumferential catgut suture. The line of intestinal closure was fortified by a few interrupted catgut stitches introduced in a direction parallel to the long axis of the intestine. A gauze drain was inserted to site of rupture, as leakage was feared. There was no flushing, nor irrigation of the peritoneal cavity and no prolonged mopping or swabbing of the various peritoneal fossæ. The abdominal wall was hastily closed and the patient was placed in Fowler's position. Hiccoughing and vomiting persisted at intervals during the first twenty-four hours following the operation. Symptoms of peritonism persisted for a few days. The first bowel movement occurred forty-eight hours after the operation. The drain was removed in seventy-two hours. Recovery was uneventful. The patient left the institution June 11, 1907.

A NEW EVACUATOR FOR USE AFTER LITHOLAPAXY.

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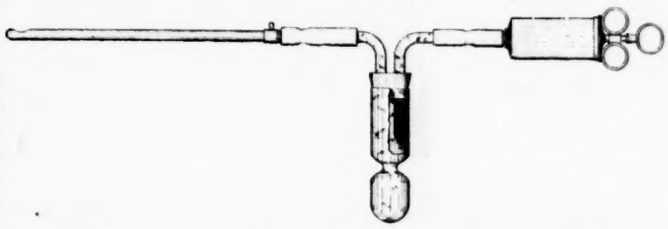
BALTIMORE.

The apparatus as shown in the accompanying cut consists of an evacuating tube, a glass receptacle, a wire sieve and a syringe. These are connected by means of two pieces of rubber tubing, two glass tubes and one rubber stopper. The evacuating tube, straight or curved, is made after the ordinary pattern. The glass receptacle is five inches in length and one and three-eighths inches in diameter. It is constricted in the lower portion, at which place the lumen is slightly larger than that of the evacuating tube. During the operation the stone fragments fall through this aperture and into the lower portion of the receptacle, where they remain undisturbed by the motion of the fluid in the upper part. The wire sieve is a closed cylinder; it is connected to the rubber stopper by means of a piece of brass tubing; this device serves to prevent any particles from passing over into the syringe. The syringe is made entirely of metal, holds three ounces and is provided with a nozzle having the same internal diameter as that of the evacuating tube. The glass tubing is of the same size.

MODE OF USE.

The manipulation of the apparatus is so simple that anyone who is familiar with the ordinary evacuator will understand it at a glance. The glass receptacle should



be held by an assistant, while the operator works the syringe. Occasionally the pressure in the glass receptacle is raised so that the rubber stopper is forced out; this can be easily prevented by the assistant holding the end of the thumb over it. A sufficient quantity of water should be injected into the bladder so that two or three ounces remain when the syringeful is withdrawn. This precaution is necessary, for there might be some danger of wounding the mucous membrane of the bladder if it came in contact with the opening of the tube during forcible suction.

I have tested the suction power of this apparatus, as well as that of the Bigelow evacuator, and have found that the former supports a column of mercury eighteen inches in height, while the latter holds one only six inches high. The apparatus is efficient, inexpensive and so simple that most of the parts can be constructed by the physician himself.

Treatment of Ringworm by Roentgen Ray.—Agnes Savill, in the *Archives of the Roentgen Ray*, gives the results in 36 cases of ringworm of the scalp treated by her with the Roentgen rays. The total number of exposures for the 36 cases was 182. Definite erythema occurred in 18 cases, in 3 of which it was severe. Recurrence was observed in 5 cases. The Drault apparatus was used and the dosage measured by means of the tint of the barium platino-cyanid pastille. The regrowth of hair occurred in some cases as early as two months after exposure, but in the majority of cases it required three months. Seventeen cases are tabulated showing the details and results of treatment.

REFLEX NEUROSES DUE TO MORBID THROAT CONDITIONS.*

ROSS ALLEN HARRIS, M.D.
LOS ANGELES.

The subject of this paper was suggested by a number of recent cases, each of which exhibited some unusual manifestation of local cause with distant neurotic effect.

These cases, while appealing most strongly to the specialist, may perhaps emphasize to the general physician the importance of associating remote asthenic consequence with a true organic origin.

CASE 1.—Hysterical cough. Physician, aged 44, of French and Spanish parentage. His family history is practically negative.

History.—For two weeks the patient had been annoyed by a dry, irritable cough, with some expectoration of white mucus; most troublesome at night or on lying down There was a sensation of a foreign body in the throat, which the patient located below the really affected area. Latterly the cough had been so persistent that he was unable to eat, sleep or attend to his office practice. His chief worry was lest the condition be one of incipient carcinoma. He said that he had had the uvula clipped, hoping that it was the slight elongation of this organ that caused the irritation. This operation had made no difference in the cough or other symptoms.

Examination.—This showed an inflamed and congested pharynx with a laryngeal hyperemia due to the frequent hawking. The uvula was considerably shortened by the recent operation. The only probable source of irritation seemed to be in two enlarged lymphatic glands at the base of the tongue.

Treatment and Result.—These glands were cauterized with the electro-cautery after local anesthesia, and it was suggested that the cough would probably vanish. To my dismay the patient appeared the next day, saying that the cough was just the same or only a little better. Suspecting an hysterical element, a second examination was made and a third lymphatic gland was found to be somewhat enlarged. This was thoroughly cauterized and the patient again dismissed. His cough almost immediately disappeared along with his worry and insomnia.

CASE 2.—Enuresis. J. W., male, aged 8.

History.—This boy, of New England birth and parentage, presented the typical facies of tonsillar hypertrophy. The bright and inquisitive eyes, however, gave the lie to the open mouth, contracted nares and church-roof palate. The father stated that the boy made unsatisfactory progress in school, that his nose seemed always stopped up, that he snored at night, caught cold easily, and was silly or irritable at times.

Treatment and Result.—Enormous tonsils meeting behind the uvula, with fleshy adenoids were readily made out on examination and were subsequently cauterized. Two weeks later the father called to report that the boy was breathing through the nose, was better natured, had not caught cold since, and was eager for school. He further stated that formerly it had been unpleasant to take him down town, as he had to urinate every fifteen or twenty minutes.

Since the operation this has all been changed. The boy goes to the toilet not oftener than four or five times daily, and this result alone was worth all the anxiety they had passed through.

CASE 3.—General headache. A. M., German boy, aged 6, was referred to me by Dr. David D. Thornton.

History.—The teachers in the day nursery complained to the mother of this unpromising youth that something was wrong with her boy's mind. He refused to play with the other children, made no progress in the simple work assigned and took no interest in anything. To his mother he was insolent; refused to dress himself, was dull and lifeless; had no appetite; had icy hands and feet, and complained of headache every morning. The child was apathetic, showed catarrhal deafness, marked icterus, with moderately hypertrophied tonsils and adenoids.

About three weeks after these last-named physical defects had been removed the mother came in to volunteer the information that a miracle had been wrought.

She said; "I noticed a change in Arnold the next morning. He got up and dressed himself. He used to say: 'You ain't my boss, I don't have to mind you;' but this morning he said: 'Mamma, I'm going to mind you the best I can.'

"He doesn't complain of headaches at all now. His color is better and he hears better. And he's hungry all the time. He has gone back to school, and the teacher told me to-day that he is the brightest boy she has."

CASE 4.—Asthmatic dyspnea. J. S., a man was formerly a cotton spinner, but lately has been a real estate dealer.

History.—For several years he has had attacks of bronchitis, and irritable cough, with occasional attacks of asthma. He raises considerable whitish mucus. There is no history or symptoms of phthisis. He catches cold easily and is very restless at night, being unable to sleep an hour at a time some nights. Both tonsils were operated on in childhood.

Examination.—The uvula was somewhat elongated and slightly edematous. Pale and abundant fragments of tonsils lined the tonsillar fossæ on either side. Posterior to these the internal carotids were distinctly seen pulsating strongly just beneath the mucous membrane.

Treatment and Result.—Uvulotomy served to relieve the cough a little, but added the annoyance of indistinct speech for a time. A short time later, after injecting a strong solution of cocain and adrenalin into the tonsillar masses, deep electrocauterization was done without inflicting much pain. Three days afterward the patient presented himself, saying that he breathed easier, coughed very little, and best of all, had slept all night for two nights, something he had not done in years. His brother stated a month later that he was breathing much better now, the asthma having apparently disappeared. He sleeps soundly and rarely coughs.

CASE 5.—Chorea. Miss B. L., aged 13.

History.—This girl came for refraction. She had complained of frontal and general headaches. A quarter diopter of hyperopic astigmatism "with the rule" was discovered in either eye. This correction was worn for a time, though with little relief from the headaches. A year later the mother brought her in again. The girl was suffering from a pronounced chorea. Spasmodic twitching of fingers, arms, shoulders and facial muscles made examination anything but easy. She had grown rapidly and was now taller than her mother.

Menstruation had not yet begun. The girl did not seem particularly intelligent. She replied to questions readily enough, though with halting speech. She had suffered from "growing pains," and an occasional angina. Neither appetite nor digestion was good. Bowels were sluggish. She had been out of school for months. Rest had made no difference. Throat examination showed catarrhal pharyngitis with hypertrophied tonsils. No other organic cause for the chorea could be discovered. Operation was advised, but declined.

A tonic was prescribed, and the case passed from observation.

CASE 6.—Epileptoid convulsions. W. R. L., a girl, aged 9.

History.—This girl was a type of the effects of vicious breathing. Naturally restless, active and precocious, her parents had started her in the kindergarten when she was 3 years old. Like many people they regarded the kindergarten as an asylum for the confinement of a too lively animal. At 5 years of age this girl was taking piano lessons, though she was too nervous, her mother said, to practice much; of late she had been much troubled with headaches. She looked pale and anemic, but this was attributed to the constant reading indoors, of which she was very fond. The teacher said she was bright enough, but very fidgety in school, and showed lack of concentration. A refractive correction of her total astigmatism was prescribed for constant wear.

Treatment and Result.—As the child was a mouth-breather and caught cold easily, examination was made for lymphatic hypertrophy. The adenoids were abundant and the tonsils enormous. These were removed, the former with Gottstein's curette, the latter with the tonsillotome. The mouth-breathing continued. A year later the girl was brought to me again. The mother said that she had had three convulsions in her

* Read at the semi-annual meeting of the Southern California Medical Society, Coronado, May 2, 1907.

sleep at different times. After the first one the family physician was called in. He declared that it was due to indigestion; he regulated the diet and ordered no lessons outside of school work. The second attack happened to be just as the mother was retiring, and was described by her rather graphically. The girl was apparently sound asleep, she said. She suddenly gave an inarticulate cry, and, clenching her fingers, began trembling contractions of hands, arms, legs and body. The muscles of the face were frightfully contorted and froth appeared at the open lips, which were drawn in a ghastly smile. The face was flushed; and although her name was called repeatedly she made no reply. After a few moments the child's muscles relaxed, and she seemed to be lying in profound slumber. The face was still flushed, but she slept all night. The next morning, as on the other two occasions, she complained of a severe headache, but at no time was she aware of the nerve storm, nor was she ever told about it. After the third convulsion it occurred to the parents to have the throat re-examined, as she had suffered from an occasional sore throat. The tonsils were found enlarged again to almost the former size. A second operation was advised. It is now two years since this last operation was performed, and the child has had no recurrence of the convulsions during that time.

To relate in detail a case of migraine in a teacher subject to angina and rheumatism, whose astigmatism was carefully corrected without effect on the unilateral headache, and who declined operation on fibrous, atrophic tonsils, would be to prolong this paper.

These clinical studies have been sufficient to sustain the contention of a reflex connection between the abnormal throat and the commoner neuroses. A really normal pharynx in an adult is rare. An edematous uvula or hypertrophy of the lingual lymphatics may give rise to irritative cough.

Nocturnal enuresis is common in the type of patients under discussion. It may be explained by the accumulation of carbonic acid gas in the brain dulling the sensory nerves so much that the irritation ordinarily attending accumulated urine is insufficient to give warning to the sleeper. Unconscious relaxation of the sphincters results. Frequent diurnal micturition is similarly due to imperfect cerebral nutrition, resulting in constant irritation of all reflex centers.

Hysterical dyspnea may be occasioned by tonsillar fragments acting as a foreign body and initiating spasmodic contractions of the diaphragm. Tonic and clonic convulsions as well as headaches may be caused by the toxins elaborated by the throat fungi. St. Vitus' dance results. The association of this disease with rheumatism has been often commented on. Both have been observed accompanying or following an acute angina.

Lymphstasisand venous stasis at the base of the brain of mouth-breathers, with impairment of nutrition of its cortex and membranes, is provocative of epilepsy.

Who can say that the psychoneurotic prodigy, Joan of Arc, was not obsessed by the mysterious whispers of catarrhal drum-retraction, rather than by angels' voices? Was not Beethoven pursued and hounded to his death in the horrible silence of total deafness by a single tone, all-powerful, overwhelming, on which he built imaginary concertos and symphonies?

In that ulterior day when men shall no longer, in home and mart and highway, think only of acquisition and profit, but of health and right; when a good name shall be more diligently sought for than great riches; when the science of medicine shall have become prophylactic instead of symptomatic; then shall the hysteric and the neurotic receive their meed of thought and care. Then shall those functional diseases no longer be allowed to develop into organic lesions, and epilepsy and insanity be as rare as variola and cholera.

DISLOCATION OF THIRD CERVICAL VERTEBRA—REDUCTION—HEMORRHAGE TEN HOURS LATER.

A. D. S. McCOY, M.D.
PASADENA, CAL.

History.—T. M., aged 36, a house mover, in raising a house, May 29, 1907, the wrench with which he was turning a jack slipped and he fell backward, striking on the back of his head with a great deal of force. He said that for a minute he could not move nor speak, though he could hear the other men talking. After a few minutes he crawled from under the house and walked to the Emergency Hospital, about four blocks.

Examination.—At 9 a. m., fifteen minutes after accident, examination showed the head flexed so that the chin nearly touched the thorax, slightly turned to the right and held very rigid. There was a protrusion, the size of a hen's egg, on the right side of the spinal column in the region of the third cervical vertebra. The right arm was paralyzed. He would hardly allow me to touch the neck on account of the pain, and all attempts to turn the head caused severe pain. I finally made out the lump to be caused by a dislocation to the right of the third cervical vertebra. While examining more carefully, I pressed on the displaced vertebra, at the same time turning the head to the left, and the vertebra slipped back into place with a pronounced click. The man immediately raised his head and turned it with the greatest ease. The paralysis of the right arm immediately disappeared. All pain in the neck disappeared and he said he felt as well as ever. A figure of eight bandage was put on to hold the head as still as possible, and patient was told to go to bed and remain quiet.

Subsequent History.—At 8 p. m. I was sent for. The patient complained of pain in neck, and a feeling of "deadness" on the right side, which had come on a few minutes before. Examination showed paralysis of the entire right side, except the face, and all sense of feeling was lost in that. In the course of thirty minutes he had lapsed into profound coma, stertorous breathing, and constant twitching of muscles of left side. On inquiry I found that he had been up and around the house and out on the street all the afternoon. He was removed to the hospital, ice applied to the back of the head and neck. After about an hour he partially regained consciousness, complained of pain all over the left side and in the neck; twitching of the left side was very marked; no sensation on right side; hyperesthesia on left side; left pupil normal, right eye had been removed some years before. Patient very restless and somewhat delirious. The next morning his mind was clear and the following day feeling had begun to return to the right side. Paralysis gradually disappeared, first in the leg, later in the arm.

There evidently was a hemorrhage which pressed on the right side of the cord and medulla, and was extensive enough to cause complete paralysis of the right side and irritate the nerve centers of the left side sufficiently to cause twitching of the muscles of that side.

Tuberculosis of Accessory Sinuses of the Nose.—J. W. Gleitsmann, New York, in the *Laryngoscope*, states that although tuberculosis of the accessory sinuses is of rare occurrence it is deserving of more attention than it usually receives. He says that it is difficult to determine the exact etiologic factor, as the writers who report cases generally confine themselves to a short report and omit the important data. From the histories, however, the majority of cases seem to be due to extension from a neighboring focus. Of twenty cases reported, Gleitsmann found that the maxillary sinus was involved in twelve. Most of the patients suffered from pulmonary tuberculosis and a few only had the symptoms of empyema of the antrum without any constitutional disturbance; at operation tubercle bacilli were found in the discharge evacuated. The prognosis in this condition, Gleitsmann says, is doubtful and the treatment eminently surgical and not differing radically from that generally adopted in severe cases of empyema of the sinuses.

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SATURDAY, AUGUST 3, 1907.

THE RELATION OF "HEART DISEASE" TO SUDDEN DEATH.

It is the usual custom to say, when a person dies suddenly under almost any circumstances, that it is due to heart disease. This has become so common that now it scarcely requires a physician for this diagnosis, and even the policeman who picks up the body of one who died suddenly on the street calmly pronounces the words "heart disease." There is little justification, however, for the assumption that most of the unexpected deaths are due to the heart, and those who have made the most exhaustive study of cardiac affections are practically unanimous in proclaiming the fact that sudden death from the heart alone is not nearly so common as has been imagined. It is now nearly half a century since Stokes protested against the popular conception that sudden death is very common in heart disease. He insisted that only in the aortic forms of heart disease is death likely to be sudden, and that even in these the almost inevitable involvement of the other parts of the heart, in various degenerative processes, usually leads to a prolongation of the breakdown that precedes death, so that the termination is as a rule only after abundant warning.

Professor Gibson of Edinburgh, one of the best authorities on heart disease of to-day, recently emphasized these expressions of Stokes. In the Morrison lectures before the Royal College of Physicians of Edinburgh, less than five years ago,[1] he declared that Stokes' words have been abundantly justified by a half century of additional experience and that "we now recognize that sudden death is not of extreme frequency in such affections. One or two special diseases are, as we know, prone to sudden dissolution, but these form a great exception to the vast mass of cases of heart disease. As we grow older our prognosis in cardiac affections, though it will probably remain for a long time one of the opprobria of practical medicine, becomes without doubt rather more hopeful than when we start out on our life work as physicians."

Professor Brouardel of the University of Paris is in striking agreement with these two British authorities. His long experience in connection with the morgue of that city, at which for over a quarter of a century he has been the teacher of the various phases of legal medicine, which occur in connection with sudden death of all kinds, makes his opinion particularly valuable. He says that "fifty years ago the doctrine of Bichat prevailed, that death took place by the heart, the lungs or the brain. To-day we can assert, at any rate as far as sudden death is concerned, that death is especially apt to be brought about by the kidneys, and we ought to restore the humoral theory to a place of honor." In his book on "Death and Sudden Death" he discusses this subject very thoroughly. He confesses that sudden death often occurs as the result of changes which take place in the circulatory system, but it is not essential that there should be any lesion of importance. A lesion in the circulatory system may have its seat in the heart or the vessels, "but especially in the vessels of the brain or kidneys." This view is so different from what is ordinarily the accepted opinion that it seems worth while to emphasize it.

Brouardel insists that probably more people die suddenly as the result of complications associated with kidney disease than from any other single affection, and even seems to think that the next most frequent cause of a non-expected fatal termination, in the midst of apparent health, is apoplexy. This would leave heart disease to occupy only the third place. It must not be forgotten in this regard that some at least of the comatose conditions which come over mankind from either Bright's disease or diabetes are so overwhelming in their onset that death is practically instantaneous. It is for evidence of these that one must look, at least as much as for heart disease, when there has been a sudden fatal termination.

It is necessary to keep in mind, however, the fact that the relative frequency of a sudden fatal termination of heart disease is an entirely different thing from the proportion which sudden death from heart disease bears to the total number of cases of sudden death. The close connection between the kidneys and the heart make it almost inevitable that the heart should be affected in some way in cases of death from kidney lesions. In these cases the kidney disease is perhaps the primary cause and it may be the lesion that appears most prominently at the autopsy, but death is almost always caused through interference with the circulation and frequently the heart is at fault. Sudden death in heart disease occurs in forms of cardiac affections in which a sudden interruption of the heart's blood supply is possible, especially in affections of the coronary artery, and it is just these conditions that are likely to depend on primary disease of the kidney.

From a prophylactic viewpoint it will be found that the measures best calculated to avoid sudden death from kidney disease will be essentially the same as those calculated to secure the integrity of the heart. Among them the most important are the voidance of sources of poisoning either from without or from within, the

1. The Nervous Affections of the Heart, 1902-1903, London and Edinburgh: Young J. Penland, 1905.

avoidance of alcohol, tobacco, too large an amount of meat and the prevention of autointoxication of all kinds.

This subject is all the more interesting at the present moment because sudden death on the street is more common during heated periods than at other times. When the kidneys are affected a prolonged spell of heat adds greatly to the danger of sudden fatal termination. There could be no better time then for the review of opinions with regard to sudden death and a remaking of them to accord with those of the best authorities in the matter.

THE CONTROL OF INSECT-BORNE DISEASES IN THE ARMY.

The admission rate for malarial diseases among American troops serving in the Philippine Islands reached the maximum of 742.81 per thousand in 1900, and steadily declined from that time until the minimum of 220.65 per thousand was reached in 1904. This reduction followed the active efforts of medical officers of the army to control the disease. Since 1904, however, a steady rise in the admission rate for malarial diseases has been noted, reaching 304.20 per thousand in 1906. In the United States proper the maximum rate of 655.82 was reached in 1898, followed by a rapid decline to a low rate of 45.29 in 1905. In 1906 the rate in the United States again rose to 50.27 per thousand.

This unwelcome increase in malarial fevers in the last year or two led to an investigation as to the efficiency of the measures which had been taken in the Philippine Islands to protect the soldiers against malaria. It was found that after nine years of occupation by us practically nothing had been done in the way of mechanical protection. In the Department of the Visayas not even a single hospital was screened, while in the Department of Luzon but three buildings or parts of buildings were thus protected. Efforts are now being made to have all quarters, hospitals and barracks used by troops in the tropics thoroughly screened with 18-mesh wire gauze so as to exclude all mosquitoes.

In the United States proper practically all barracks, quarters and hospitals are screened, but many of the screens are not effective so far as excluding all mosquitoes is concerned, as owing to the question of expense many of the windows have only half-screens. In such cases the soldiers, with the natural perversity of their kind, generally open that part of the window not screened, so that full length screens are the only adequate means of protection.

It is understood that many of the buildings in the Philippine Islands used by troops are so constructed as to make it difficult to screen them effectively, but though the task may be difficult, it is not thought to be in any case impossible, and the matter is of such great importance that future construction should be planned with especial reference to the complete exclusion of mosquitoes. The value of such protection against mosquito-born diseases is not a matter of theory, but has been abundantly proved by practical experience, especially in Italy.

On the Adriatic railroad system, where formerly all the employés in certain districts, with hardly any exception, suffered from malarial fever, now of 10,000 employés at the same stations, but protected by wire gauze, during the last few years only 11.41 per cent. suffered, or but little more than the percentage of malarial cases occurring among some 25,000 persons employed in non-malarial stations.

Screening is now employed even in rice fields, wire work sleeping places being constructed for the "pruners of rice." In Corsica mechanical protection by screening, together with the use of quinin, reduced the morbidity from malaria from 50 per cent. of the inhabitants to 11.5 per cent., this 11.5 per cent. being mostly relapses. The Italian experience has demonstrated not only the efficiency, but also the great economy of this method in preventing the loss of effective labor from sickness.

Owing to our increasing knowledge of the importance of flies as transmitters of typhoid fever and other infectious diseases, it has also been recently recommended that all stables at military posts be provided with a fly-proof room or bin in which the daily accumulations of manure are collected, and that the manure be so treated, handled and disposed of as to prevent flies from breeding in it.

AMBULANCE SPEED.

As the traffic in the streets of our large cities becomes greater, and the number of rapidly-speeding trolley cars, automobiles, mail and express wagons and other vehicles becomes larger, the accidents to hospital ambulances grow constantly more frequent. This is lamentable because the ambulance service is primarily intended to save life and suffering and many of these accidents add to the amount of suffering and sometimes even cause fatalities.

The public is prone to make way for an ambulance, if only proper warning is given and sufficient opportunity provided to allow of yielding the right of way. There are very few people who fail to have a thrill of sympathy for the errand of mercy on which the ambulance is bound. This is a bit of humanity that exhibits itself even in the midst of the greatest hurry and bustle. The public can scarcely be expected to do more in this matter than they do at present. It would seem, therefore, that a reduction in the number of accidents to ambulances must come rather from a stringent enforcement of certain precautionary regulations than from renewed efforts to have the right of way, which is so equably granted, made more effectual.

One feature of the accounts of ambulance accidents is that in the majority of cases the ailment of the sufferer who is being taken to the hospital is not such as

demands speed to save either life or suffering. Occasionally one hears that a patient was being taken to the hospital in preparation for an operation that was to be performed the next or even following day. Not infrequently the patient is suffering from some chronic ailment. Occasionally the case is already hopeless or practically so when taken by the ambulance surgeon. This was the case not long since in one of the large eastern cities where the ambulance demolished in an accident contained a little patient suffering in the last stages of cerebrospinal meningitis, very probably of tuberculous origin, yet the ambulance was being driven at top speed and a serious accident resulted. Nearly if not quite one half the ambulance calls require no special haste, yet it is almost an exception to see a hospital ambulance going at a moderate gait.

Ambulance drivers and young surgeons on ambulance service are somewhat prone to take advantage of their opportunity to make their way through crowded streets with all the speed they may for the sake of the effect produced by the clang of the bell and the right of way so willingly accorded them. This privilege, however, can readily be, and in the past has frequently been, abused in the way that we have pointed out.

It is needless to remark that such stringent regulations should be enforced with regard to ambulance service as will lessen the number of accidents. Surgeons who are merely transferring patients with regard to whom there is no special haste should be held strictly responsible for accidents due to speed greater than is necessary in the particular instance. The rushing across avenues crowded with traffic should never be permitted except under the most urgent conditions, and those absolutely known beforehand and not merely presumed on general principles. We have no doubt that a judicious reform in this matter will effect a saving to hospitals in bills of repair and will avert not a little human suffering and even save lives. Some accidents are inevitable, but the considerations we have suggested are sufficient to make it clear that they may be lessened to a noteworthy degree.

THE RESULTS OF ORGANIZATION.

The changed conditions in medical affairs, which have resulted in nearly every state since the adoption of the new plan of organization, are now becoming noticeable, especially when contrasted with those which existed five or six years ago. While the scientific work is not being neglected in the slightest and while the programs of recent state meetings, we venture to say, will compare most favorably with those of previous meetings, yet the state society is accomplishing something more than the discussion of scientific subjects and has become something more than a scientific mass-meeting. Our state societies which have reorganized and established a house of delegates are now, actually and potentially, legislative bodies, considering practical questions and legislating for the profession of the state. The adoption of these features has made possible results which never could have been obtained from the old general mass-meeting, in which there was never time to give careful consideration to practical questions and under which any carefully formulated policy was impossible.

These reflections are called out by reading the report of the recent meeting of the Michigan State Medical Society, which appeared in the July number of the state journal.[1] One of the most noticeable points of difference between this report and that of a few years ago is the wide range of practical subjects considered by the House of Delegates. Medical organization, the state journal, advertising, graduate work, medical legislation, school hygiene, tuberculosis, contract practice and the medical care of paupers are but a few. The reports rendered and the actions taken on these questions are far different from the old plan of passing hasty resolutions, which were utterly ineffectual so far as practical results were concerned.

Attention should especially be called to the excellent report on contract practice, one of the best yet submitted on this perplexing but important question, and one full of suggestion to other societies which may have the same subject under consideration.

In spite of the fact that certain medical journals opposed to organization have claimed that Michigan is one of the states in which dissatisfaction and disaffection exist, the council of the state society reports the past year one of "medical revival in Michigan." The universal report is that the work of county societies is being carried on with greater energy and enthusiasm than ever before. The officers and members of the Michigan State Medical Society are certainly entitled to congratulations on the excellent work done during the past year, which can not fail to result in greatly improved conditions, both for the public and the profession.

Yet Michigan is not an isolated instance, but is only one of many states in which similar work is going on. Things are now being done that in the past were only talked of. It is noticeable that the amount of practical work which is being carried on in each state is in direct proportion to the length of time which has elapsed since the state adopted the reorganization plan and provided for a small representative body of men, who could devote their time, during the annual session and during the year, to legislation and work for the good of the public and of the profession. Formerly, a state association was a succession of annual mass-meetings, separated by intervals of fifty-one weeks of inactivity. Now, by means of the council, the standing and special committees and the house of delegates, each properly organized state society is a well constructed machine, working continuously and effectively all the year around. As our state organizations gain in strength and experience, we may look for greater results in the future than were ever dreamed of in the past.

1. See page 436, Department of Medical Economics, this issue.

THE ORIGIN OF LIFE.

A number of years ago Lord Kelvin offered what was then considered by many the extravagant hypothesis that life first came to this planet on meteorites thrown off from other celestial bodies and carrying the germs of their existing organisms. The theory was widely discussed for a time, but had its little day and was apparently dropped as a mere hypothesis probably incapable of proof and open to too many objections to require serious consideration. It is not dead, however, and it has again been brought before the public in a modified form by the distinguished Swedish physico-chemist, Arrhenius, who figures out the possibility of germs, even from other solar systems, reaching us, propelled by light and with their vitality maintained by the preservative action of the low temperature of space. It is somewhat significant perhaps that one to whom the more advanced chemistry of the day owes so much, should consider it worth while to assume an extra mundane origin of life, when so many of the minor chemico-biologists are proclaiming that life is itself a form of chemism. If the universe is permeated with wandering germs and all life and evolution are everywhere essentially the same, we are then liable to almost anything in the way of pathologic possibilities. The chance arrival on our planet of some ultra virulent germ might at any time produce a catastrophy as fatal to the human race as the collision of a dark star with our sun so vividly imagined by Professor Newcomb. Such speculations are perhaps of no practical use, but after all the question of the origin of life is an ever recurring one. Any one who, in the present status of our knowledge, assumes that it is settled—that any hypothesis can be considered as definitely proved—must have very inadequate ideas of what constitutes proof.

Medical News

CALIFORNIA.

New Hospital for Eureka.—A charter has been granted to the St. Francis Hospital at Eureka and the directors have elected the following officers: President, Dr. George N. Drysdale; vice-president, Dr. Oliver W. Sinclair; secretary, Dr. Edward J. Hill.

Personal.—At the regular meeting of the Board of Health of San José, July 1, Dr. Charles H. Walter was elected secretary and health officer.——Dr. Louis D. Baciagalupi, surgeon of the Naval Reserves at San Francisco, became exhausted while swimming at Ocean Park recently and narrowly escaped drowning.——Dr. Andrew M. Henderson, Sacramento, was badly bruised in a runaway July 21.——Dr. Esther C. Pohl has been appointed health officer of Portland, vice Dr. Cortez H. Wheeler, resigned.

Vital Statistics for June.—During June 1,994 births and 2,343 deaths were reported to the State Board of Health. Heart disease and allied ailments caused the greatest number of deaths. There were 349 deaths, or 14.9 per cent. of all, from diseases of the circulatory system, against 329, or 14.0 per cent., from tuberculosis of the lungs and other organs. Third in order were diseases of the respiratory system, causing 219 deaths, or 9.3 per cent. of all. There were 55 deaths from meningitis and 188 from other diseases of the nervous system, apoplexy, etc. Typhoid fever was the most fatal epidemic disease of the month. Deaths caused by epidemic diseases were as follows: Typhoid fever, 36; diphtheria and croup, 25; measles, 24; whooping-cough, 21; scarlet fever, 12; influenza, 10; malaria, 6, and all other causes, 15.

GEORGIA.

Personal.—Dr. R. B. Ridley, Jr., Atlanta, was operated on for appendicitis July 18.——Dr. J. B. Morgan, Augusta, has been seriously ill, but is now convalescent.——Dr. N. A. Frier, Bickley, a prominent representative of the profession in the state legislature, was recently appointed a member of the legislative committee on banks and banking, general agriculture, public libraries, University of Georgia and branches and others. He was also appointed vice-chairman of the committee on hygiene and sanitation. Dr. Frier is a member of the Ware County and Georgia State medical societies.

Society News.—At a meeting of the Troup County Medical Society, held at LaGrange, July 18, the following officers were elected for the ensuing year: President, Dr. Albert J. Tuggle, LaGrange; vice-president, Dr. Robert H. Jenkins, Hogansville; secretary, Dr. Henry W. Terrell, LaGrange.——Physicians of the Fourteenth Senatorial District met at Americus July 17, and organized a medical society with the following officers: President, Dr. Richmond Statham, Americus; vice-president, Dr. T. J. McArthur, Cordele; secretary, Dr. R. A. Stovall, Vienna.——The annual meeting of the Fifth District Medical Association was held at Atlanta, July 16. The following officers were elected for the ensuing year: President, Dr. Thomas R. Whitely, Douglasville; vice-president, Dr. Edward G. Jones, Atlanta; secretary and treasurer, Dr. John Ross Simpson, Atlanta.

ILLINOIS.

Claimed He Could Fix the State Board.—"Dr." Edward Dowdall, Chicago, has been arrested, on complaint of the secretary of the State Board of Health, charged with obtaining money from physicians, medical students and others by claiming that he could "fix" the board and thus enable them to pass the state board examinations successfully. Dowdall is also charged with practicing medicine without a license.

Personal.—Dr. William Blender, Carthage, has been appointed associate professor of anatomy at Keokuk Medical College.——Drs. A. H. Beebe and C. C. Anthony of the staff of the Illinois Asylum for the Incurable Insane at Bartonville, have resigned to enter private practice.——Dr. Charles I. Allen, Milton, was found to be insane July 19, and was taken to a hospital in Jacksonville.——Dr. Ewing M. K. Taylor, Leroy, has been appointed county physician of Macon County and will remove to Decatur to assume his duties.——Dr. George W. Evans, Marion, was overcome by heat July 20, and for several hours was in a critical condition.

Chicago.

Lake View Hospital to be a Public Institution.—The Lake View Hospital and Training School for Nurses, for two years conducted as a private institution, has been incorporated with a capital of $30,000 and will begin public work. Dr. Orlander E. Wald is president.

Result of Examination for Ambulance Surgeons.—A report from the Civil Service Commission on the examination recently held for city ambulance surgeons shows the following to be the first five men, in order of standing: R. T. Vaughan, F. Rastall, C. H. Gowan, A. L. Hoyne and C. H. Wall. About 85 candidates took the examination for the 16 positions to be filled.

Police Cooperate with Health Department.—The Bulletin of the Chicago department of health states that for the first time in its history the department is receiving the active cooperation and assistance of the department of police in its efforts, not only to safeguard the health, but also to promote the comfort and general well-being of the citizen. The present chief of police, George M. Shippy, introduces this new departure by an order intended to abate the intolerable hot-weather nuisance arising from failure to remove promptly the bodies of dead animals from streets, alleys and other places.

Vital Statistics.—The total number of deaths for the week ended July 27 was 548; of these 298 were males and 250 females. There were 132 deaths among children under one year of age. Acute intestinal diseases caused 90 deaths; tuberculosis, 65; violence, other than suicide, 49; pneumonia, 42; heart disease, 41; Bright's disease, 28; nervous diseases, 27; cancer, 24; scarlet fever, 11; apoplexy, 9; typhoid fever, 7; bronchitis, 6; suicide, 6; convulsions, 6; measles, 4; whooping-cough, 4; diphtheria, 3; sunstroke, 2; tetanus, 1; all other causes, 123. One smallpox patient, an unvaccinated woman, was sent to the Isolation Hospital during the week.

Health School for Chicago.—Articles of incorporation have been granted for the Chicago School of Sanitary Instruction, with Health Commissioner Evans, Assistant Health Commissioner Reilly and Dr. J. Biehn as founders. Free instruction

will be given in general bacteriologic work, in bacterial diagnosis of disease and in the chemical analysis of water, ice, milk and food products. The students must serve two weeks in the city laboratory and two weeks accompanying the sanitary inspectors around the city. The faculty of the new school includes besides the health commissioner, Dr. Frank X. Walls, chief of the antitoxin service; Charles B. Ball, chief sanitary inspector; Dr. C. W. Behm, chief of the disinfection service; Dr. M. O. Heckard, registrar of vital statistics; Dr. Joseph Biehn, director of the city laboratory, and Dr. Heman Spalding, chief medical inspector.——Dr. Max Reichmann has returned from Europe.

INDIANA.

Typhoid Epidemic in Hammond.—Fifteen new cases of typhoid have been reported from Hammond, and a meeting of the State Board of Health has been called to arrange for a determined effort to check the spread of the disease.

Personal.—Dr. John L. Freeland has been appointed superintendent of the Indianapolis City Hospital to succeed Dr. Norman E. Jobes, who resigned recently.——Dr. Francis J. Duckworth, Indianapolis, received a severe scalp wound July 21, when a fare register on a street car fell on his head.——Dr. Harvey J. Clements, Converse, has accepted a position on the faculty of Willamette University, Salem, Ore.; he will be succeeded at Converse by Dr. Lucian W. Smith of Liberty Center.——Dr. John Q. Garner, one of the oldest physicians of Elwood, was seriously injured in jumping from a street car, July 10.——Dr. John D. Kaple, South Bend, has retired from active practice and will move to central New York; he will be succeeded by Dr. William M. Cook of LaGrange.

Sickness and Death in Indiana in June.—The *Monthly Bulletin of the State Board of Health* states that measles was the most prevalent disease. In the corresponding month last year rheumatism was the most prevalent and measles was thirteenth in order of prevalence. The exact order of prevalence for the month was as follows: Measles, rheumatism, tonsillitis, diarrhea, bronchitis, typhoid, cholera morbus, intermittent and remittent fever, smallpox, diphtheria, membranous croup, pneumonia, scarlet fever, inflammation of bowels, cholera infantum, dysentery, erysipelas and influenza. There was a decided increase in smallpox as compared with the same month last year, for there are on record 119 cases in 31 counties, with one death in St. Joseph County. In June, 1906, 63 cases were reported from 8 counties, with no deaths. The tuberculosis deaths numbered 343. The average for this disease in June for the last seven years is 334. Of the total number of tuberculosis deaths, 153 were males and 190 females. Of the males, 22 were married and in the productive age period from 18 to 40, and they left 47 orphans under 12 years of age. Of the females, 66 were married and in the productive age period from 18 to 40, and left 133 orphans under 12 years of age. Diphtheria was less prevalent than in June last year. The total number of deaths was 2,504, rate 11.3. In the corresponding month last year 2,322, rate 10.6. Deaths under one year of age numbered 312, or 13.1 per cent. of the total, and 65 years and over, 766, or 32.3 per cent. of the total. The country death rate was 9.7 and the city rate 13.9. The cities having from 25,000 to 50,000 population had the following death rates: Indianapolis, 14.1; Evansville, 14.4; Fort Wayne, 15; Terre Haute, 13.8; Anderson, 9.4; Muncie, 9.8; South Bend, 18.3. Cancer deaths numbered 119; deaths from violence, 184; smallpox, 1. Diarrheal diseases prevailed more extensively than in the same month last year, the respective number of deaths being 86 and 68. For the month of June, 1907, the summary shows that the number of deaths and the death rate was higher than in the corresponding month last year, and also that sickness prevailed to a degree about 4 per cent. greater.

IOWA.

New Hospital for Mason City.—The Sisters of Mercy have announced their intention to accept the offer made to them to assume $30,000 of the cost of the new $50,000 hospital to be erected there. They have also agreed to take charge of the hospital, provided Mason City furnishes the remaining $20,000 and a site for the building.

Personal.—The State Board of Health has elected Dr. Joseph Henry Sams, Clarion, president, to succeed Dr. F. W. Powers, Waterloo, who will retire from the board at the end of the year.——Dr. Alexander M. Linn, Des Moines, has been elected president of the board of medical examiners to succeed Dr. Sams.——Dr. A. B. Conaway, Marshalltown, has returned from a trip through Indian Territory, Oklahoma and Texas. ——Dr. Alfred O. Williams, Ottumwa, was operated on for appendicitis July 11, and is now convalescent.

KANSAS.

Vital Statistics for June.—During the month there were 77 deaths from contagious diseases, as follows: Tuberculosis, 52; typhoid fever, 9; diphtheria, 3; scarlet fever, 1; smallpox, 1; measles, 11.

New Home for Medical School.—The Washburn University trustees have purchased the Oddfellows' building in Topeka. The building will be used for the Kansas Medical College. The medical school will be moved into its news quarters by the time the college opens in September.

Personal.—Dr. Eleanor Ernest, Topeka, has been appointed professor of materia medica in Kansas Medical College.——Dr. Charles T. Halm is seriously ill with appendicitis.——Dr. George Minney, Topeka, was painfully injured by falling from a wagon, but is now convalescent.——Dr. Herschel Hendricks, Iola, is going to New Mexico for his health.

MARYLAND.

Baltimore.

Mosquito Extermination.—Dr. Bosley, commissioner of health, contemplates continuing the work of mosquito extermination, which has been so successful, as a regular part of the work of the department.

Vacation Outings.—Dr. Walter B. Platt has gone on a camping trip with his two sons to Lake Champlain.——Dr. Ira Remsen is at Prout's Neck, Me.——Dr. B. Merrill Hopkinson has gone to New England for a month.——Dr. Charles J. Keller is at Atlantic City.——Dr. Arthur M. Shipley of University Hospital is at Wesley Grove camp meeting.——Drs. J. Howard Iglehart and J. W. C. Cuddy have gone to New York City.

Personal.—Dr. Fitz Randolph Winslow, recently attached to the resident staff of University Hospital, left Baltimore July 27, for Berkeley, Cal., to practice.——Dr. Harry Wilbur Stoner, a recent graduate of the University of Maryland, has been appointed assistant bacteriologist to the State Board of Health. ——Dr. John G. Jeffers has been appointed demonstrator of obstetrics at Baltimore Medical College.——Drs. Marshall B. West and John A. Tompkins, Jr., are physicians to the Orange Grove Summer Home for Children.

MASSACHUSETTS.

Personal.—Dr. Ernest D. Richmond, Reading, sailed for Europe July 15.——Drs. Arthur T. Cabot, Boston; William D. McFee, Haverhill, and Albert C. Getchell, Worcester, have been appointed as members of the commission to establish three tuberculosis sanitariums in the state.

Physicians Appointed.—As a result of the division of the state into districts the following physicians have been appointed district health officers: Drs Charles E. Morse, Wareham; Adam S. McKnight, Fall River; Wallace C. Keith, Brockton; Elliott Washburn, Taunton; Harvey Linenthal, Boston; Albert P. Norris, Cambridge; J. William Vose, Beverly; William H. Coon, Laurence; Charles E. Simpson, Lowell; William W. Walcott, Natick; Melvin T. Overlock, Worcester; Lewis Fish, Fitchburg; Harvey T. Shores, Northampton; Richard S. Benner, Springfield, and Lyman A. Jones, North Adams. These physicians will, under a recent act of the legislature, be required to gather all information possible concerning the prevalence of tuberculosis and other dangerous diseases, and to disseminate knowledge as to the best method of preventing the spread of such diseases. They are empowered, after conferring with the state and local health authorities, to take such steps as shall be deemed best for the eradication of disease.

MICHIGAN.

Personal.—Dr. Leartus Connor, Detroit, has suffered the severe affliction of the loss of his wife, who died suddenly, July 21.——Dr. Charles B. MacCartney, first assistant physician at Oak Grove Sanitarium, Flint, has resigned to spend several months in graduate study in Europe.——Dr. Charles W. Niles, Calumet, has resigned as a member of the Calumet and Hecla Hospital.

Society Elects Officers.—At the annual meeting of the Upper Peninsula Medical Society, held at Menominee, July 16, the following officers were elected: President, Dr. Benjamin T. Phillips, Menominee; vice-presidents, Drs. I. C. Girard, Escanaba, and William T. S. Gregg, Calumet; secretary, Dr. Harry J. Hornbogen, Marquette. Marquette was decided on as the next meeting place.

MISSOURI.

Society for Prevention of Tuberculosis.—The Ralls County Society for the Prevention of Tuberculosis was organized July 17. Dr. William T. Waters, New London, is secretary.

Additions to Tuberculosis Hospital.—A contract has been entered into by the Missouri State Tuberculosis Sanatorium for the erection of another building—a villa—for patients. It will cost about $22,975.

Personal.—Dr. Tazewell B. Wingo, Dexter, has been appointed to the position made vacant at the Hospital for the Insane at Fulton, by the resignation of Dr. J. F. Harrison, who has been appointed superintendent of the Farmington Hospital for the Insane.

Society Elects Officers.—The Ray County Medical Society met at Hardin July 17 and elected the following officers for the ensuing year: President, Dr. Edwin H. Musson, Rockingham; vice-presidents, Drs. Luther D. Green and Robert Sevier, Richmond; secretary, Dr. Herman S. Major, Hardin; treasurer, Dr. Marvin Grimes, Hardin.

NEW YORK.

Diphtheria Scare.—At Bayport, Long Island, a fatal case of diphtheria has spread alarm among the members of the summer colony; they fear an epidemic.

Epidemic of Rabies Feared in Rochester.—Several cases of rabies have occurred in Rochester recently and Dr. Goler, the health officer, has conferred with veterinary surgeons in regard to the most efficacious measure for checking the spread of the distemper.

Bills Approved by the Governor.—Among the bills signed by Governor Hughes are the following: Mr. Waddell's, requiring water corporations to supply the inhabitants of any city, town or village through which the conduits may pass with pure and wholesome water at reasonable rates. Senator McManus', providing for the pensioning of a dependent widowed mother left by a physician or employé of the New York City health department who died from a disease contracted in the service. Mr. Strattan's, amending the agricultural law to prohibit the use of unclean and insanitary milk cans and providing for their confiscation, and for the appointment of two milk can inspectors in New York City. Mr. Page's, making it a misdemeanor, in filling a prescription or order for any food or preparation used in medical practice, by putting thereon any untrue designation of contents, or by substituting or dispensing a different article or amount for any article or amount prescribed, or by otherwise deviating from the terms of the order. Mr. Wainwright's, providing for a sanitary sewer in Westchester County. Mr. Huth's, providing that dangerously sick patients shall not be ordered removed from hospitals in New York City except for good cause and on written certificate of attending physicians or surgeons.

New York City.

Personal.—Dr. and Mrs. D. Ernest Walker returned from Europe July 24.——Dr. Charles H. Chetwood sailed for Europe July 25, and Dr. Philip G. Becker, July 27.

Bequests.—Mrs. Susan A. R. Moses made bequests as follows: To Faith Home for Incurables, $2,000; to Brooklyn Home for Consumptives, $5,000; to Cottage Hospital of Laconia, N. H., $5,000, and $5,000 to the Brooklyn Home for Consumptives to establish a Susan Moses room.

Stony Wold's Plan.—The president of this sanitarium has conceived a plan to be placed in operation this coming winter of building cottages near by and removing thither, when possible, the families of the patients. The men then can work about the sanitarium or the farm, while the women can raise vegetables, fruits, etc. This plan is warmly recommended by the National Association for the Prevention and Cure of Tuberculosis.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended July 20, 414 cases of measles, with 24 deaths; 308 cases of tuberculosis, with 152 deaths; 304 cases of diphtheria, with 29 deaths; 231 cases of scarlet fever, with 14 deaths; 54 cases of typhoid fever, with 9 deaths; 32 cases of whooping-cough, with 6 deaths; 13 cases of cerebrospinal meningitis, with 12 deaths, and 44 cases of varicella, a total of 1,400 cases and 246 deaths.

NORTH CAROLINA.

Charlotte Wants a Hospital.—A movement is on foot to establish a large city hospital in Charlotte.

Personal.—Dr. Z. Marvin Caviness, Wakefield, was severely cut in the abdomen by a former patient whom he had asked about the settlement of an account. He is expected to recover. His assailant was placed in jail.——Dr. Claude O. Abernethy has been elected health officer of Raleigh.——Drs. Henry T. Bahnson, Winston, and W. Thomas Parrott, Kinston, are in Europe.

Annual Barbecue.—The annual barbecue of the Wake County Medical Society was held at the state fair grounds, near Raleigh, July 12. There was a full attendance of members, along with several invited guests from adjacent counties. Several entertaining short speeches were made by Drs. James M. Templeton, Hubert Royster, Albert Anderson, Thomas S. Faucette, J. W. McPherson, William C. Horton, Augustus W. Knox, Richard H. Lewis and others. The presence of a large number of the wives of the physicians added much to the pleasure of the occasion and helped to score another success for "reorganization" and the county society in North Carolina.

Baltimore Alumni Organize.—The graduates of the Baltimore Medical College who reside in Wake County recently effected the organization of a state association at Raleigh. The following were elected officers: President, Dr. James M. Templeton, Cary; secretary, Dr. James M. Judd, Wake; vice-presidents, Drs. Thomas S. Faucette, Burlington; J. W. McPherson, Haw River; Harvey G. Utley, Apex, and H. A. Dees. There are more than forty graduates in the state, and an invitation is extended to all to unite with the association. The next annual session is to be held in Winston-Salem at the annual session of the state medical society, May 26, 1908.

PENNSYLVANIA.

Society Meeting.—The twenty-seventh annual meeting of the Lehigh Valley Medical Association was held July 11 at Glen Summit. The annual address was delivered by Dr. James H. McKee, Philadelphia. The following officers were elected: President, Dr. John T. Howell, Wilkes-Barre; vice-presidents, Drs. Adam L. Kotz, Easton; William P. Walker, South Bethlehem, and Mary A. Wenck, Sunbury; secretary, Dr. Clinton J. Kistler, Lehighton; assistant secretary, Dr. W. J. Obermeyer, Mauch Chunk, and treasurer, Dr. Albert A. Seem, Bangor.

Rules on Vaccination.—The advisory board of the State Department of Health, at a meeting July 25, adopted rules requiring the reporting of every case of communicable disease to the department officers and permitting persons who have had three unsuccessful attempts at vaccination to be admitted to school, thus laying down two important lines of policy for immediate use. The report system requires physicians in rural districts to report every case of disease to the township health officer, who is to arrange quarantine. The reports of rural cases have hitherto been made to the department's health inspectors in each county. The new arrangement will go into effect as soon as the physicians of the state can be notified.

Personal.—Dr. Eugene R. DeLong, Geigers Mills, health officer of Robeson, Caernarvon and Union townships, has resigned.——Dr. W. W. McCleary, Bellevue, was severely bruised about the face and head as the result of being thrown from a buggy recently when the horse became frightened at a street car.——Dr. James Stein, Scranton, narrowly escaped death by drowning in Lake Winola July 21, in an effort to save his fiancé when the boat capsized.——Dr. Robert W. Clark, Venango, was painfully burned July 8 by the explosion of turpentine which he was heating.——Dr. John A. Barr, one of the oldest physicians of McKees Rocks, fell from a ladder recently, breaking his leg in two places.——Dr. Samuel W. Perry, New Castle, was thrown from his automobile and badly bruised when his machine was struck by another car July 19.——Dr. Montgomery Linville, New Castle, narrowly escaped injury July 4, when his buggy was struck by a street car.——Dr. Thomas B. Allison, Tarentum, is reported to have become acutely insane July 23. The excessive heat is said to be responsible for his condition.

Philadelphia.

Personal.—Dr. Frederick Dunlap, in charge of the ambulance of St. Joseph's Hospital, was slightly injured recently when the ambulance was struck by a street car.——The following physicians sailed for Europe: July 25, Drs. George E. de Schweinitz, S. MacCuen Smith and Donnel Hughes; July 27, Drs. E. E. Hopkins and E. W. Barnardy.

Free Ice for City's Poor.—The work of distributing free ice to the deserving poor of the city, under the direction of the department of health and charities, was inaugurated July 23. Tickets for free ice, in quantities of 12 and 30 pounds, have been placed in the hands of the 48 district physicians for distribution and preference is to be given to homes having sick children.

Health Report.—The total deaths reported for the week ended July 27 aggregated 629. This is an increase of 130 over the number reported in the preceding week, and an increase of 72 over the number reported in the corresponding week of last year. The principal causes of death were: Typhoid fever, 9; measles, 4; pertussis, 7; diphtheria, 4; consumption,

65; cancer, 21; apoplexy, 21; heart disease, 41; acute respiratory disease, 29; gastritis, 7; enteritis, 152; appendicitis, 8; Bright's disease, 48; premature birth, 14; congenital debility, 23; suicide, 4; accidents, 34, and marasmus, 9. There were 138 cases of contagious disease reported, with 13 deaths, as compared with 100 cases and 8 deaths reported in the preceding seven days.

GENERAL.

Third International Conference of American Republics.—The Third International Conference of American Republics will be held in Mexico City, Dec. 2-7, 1907, under the presidency of Dr. E. Liceaga, president of the Supervising Board of Health of Mexico.

Delegates to the International Congress of School Hygiene.—The American School Hygiene Association has appointed the following physicians, among others, as delegates to the International Congress of School Hygiene to be held in London, August 5-10: Drs. Henry P. Walcott, Boston; Luther H. Gulick, New York City; Thomas Darlington, New York City; John J. Cronin, New York City; Robert W. Lovett, Boston; R. Tait McKenzie, Philadelphia; Elliott G. Brackett, Boston; Anna A. McKeag, Wellesley College; William Oldright, Toronto, Ont.

Bureau of Health Census of Manila, P. I.—Dr. Victor G. Heiser, director of health for the Philippine Islands, reports that the new Bureau of Health census, taken during January, shows that Manila has a population of 223,542, an increase of 3,601, or 16.37 per cent., since the census of 1903. The increase by nationalities is as follows: American, 801, or 18 per cent.; Filipinos, 5,510, or 2 per cent.; Spaniards, 375, or 14 per cent.; other nationalities, 248, or 27 per cent. There has been a decrease in the Chinese population due, probably, to the following factors: 1. The large emigration to the provinces which has taken place as peace conditions in the outlying districts have become more secure. 2. Operation of the Chinese exclusion law which prevents immigration of this nationality to the Philippines, thus preventing the replacing of death losses caused by the mortality. 3. The few births owing to the small number of wives of Chinamen who live in Manila. 4. The return of many to spend the remainder of their lives in China. 5. The fact that the census was taken at a time when many Chinamen were visiting their native country to celebrate the Chinese New Year.

FOREIGN.

Trachoma in Prussia.—In Quedlinburg, Prussia, a town of 23,000 inhabitants, the high school has been closed on account of an attack of trachoma, which affected 158 pupils.

Semi-Jubilee Celebration of the University of Liverpool.—The University of Liverpool celebrated its twenty-fifth anniversary July 11, by a reception which was attended by about 4,000 guests.

Personal.—Dr. Paul G. Woolley, formerly of Manila, and for over a year in charge of the government laboratories at Phrapatoom, Siam, has been appointed chief health inspector for the kingdom and medical adviser to the department of the interior, with headquarters at Bangkok.

Epidemic of Cerebrospinal Fever Diminishing.—According to the *Lancet*, the epidemic of cerebrospinal fever in Great Britain is diminishing. In Scotland, during the week ended July 13, 6 deaths from this cause were reported in Glasgow, 4 in Edinburgh, 2 in Leith, 1 in Dundee, and 1 in Paisley. In Belfast during the week ended July 6, 10 deaths were reported.

Smallpox in China.—Smallpox still prevails in Shanghai and, while the reported deaths among natives have fallen off a little, Dr. Ransom of the Public Health and Marine-Hospital Service reports that the disease seems to be spreading among the foreign population, and the isolation hospital is nearly filled to the limit of its capacity. The disease is not of a particularly virulent type, and is almost entirely limited to persons who have not been successfully vaccinated.

Leper Asylums in Japan.—Passed Assistant-Surgeon White of the Public Health and Marine-Hospital Service reports from Yokohama that it has been decided to establish homes for lepers in Tokyi-Fu, Osaka-Fu, Kumamoto, Aomori and Kagawa kens (prefectures). The site of the institution in each of these kens will be determined by the governor. Each home will accommodate about 400 persons; the staff will consist of a president, one physician, a pharmacist and several secretaries.

Alcohol and Insanity in France.—The results of a census of the insane asylums in France, to determine in how many insane alcohol had been the chief or contributing cause, has lately been published. Among 71,551 insane, 9,932 whose mental alienation is attributable in greater or less degree to the personal abuse of alcohol, a proportion of 13.88 per 100. Comparison of these statistics with those of former years is unavailable because of the incompleteness of the returns for a decade or more ago. In 36 departments, however, the figures for 1897 are sufficiently reliable for comparison. These 36 departments show 2,540 alcoholic insane in 1897; in 1907, 3,988, an increase of 57 per cent. *La Semaine Médicale*, July 10, remarks that the full influence of alcohol is not shown by these figures, as cases due to alcoholic heredity without alcoholic excess are not included.

Higher Education for Women in Russia.—The request of the University of Moscow to be permitted to admit women, not merely as listeners, but as regularly matriculated students, has been refused by the minister of public instruction, on the ground that the question can only be decided by legislation. ——Permission for the establishment of the school for the higher education of women in Kiev has been granted, on condition that laboratories, anatomic institute, etc., be provided. Eleven professors have been chosen. As the means of the new department are limited, the professors will be obliged to teach for the present without pay. Students to be admitted must have finished a course in a school of eight classes of "gymnasium" (high school) instruction. The course consists of ten semesters. Graduates receive a diploma, which, however, gives them no right to the title of doctor nor license to practice medicine.

Plague in India.—Consul-General Michael, at Calcutta, reports that plague still causes alarm in India. The disease is at its worst in Delhi, notwithstanding the extreme heat which ordinarily would lessen its severity. In Delhi from 100 to 120 cases are occurring daily. About 40,000 Hindoos had fled from the city up to May 6. Merrut, with a smaller population, reports 200 deaths from plague daily. One large bazaar is entirely deserted. Aligarh is reported as a "dead city." The Hindoos will not submit to inoculation. At Delhi the natives threw corpses of paupers who had died of the plague into the river and canal, although ample provision is made by the municipality for cremation. The status of plague in Calcutta continues to be about as it has been for some time past. The mortality reported from this disease is from 40 to 50 a day. Calcutta would be comparatively free from plague, cholera and smallpox the year round but for the large native population which lives in filth and surrounded by unhygienic conditions. The health officer and the municipal authorities are doing all they can do to bring the entire city within hygienic control.

LONDON LETTER.

(From our Regular Correspondent.)

LONDON, July 20, 1907.

Death of a Child from Alcoholism.

An inquest was held on the body of a child, aged 2 years, at Swansea, who died from alcoholism. Drink had frequently been given to him by his mother and he was taken to the workhouse drowsy from alcohol. At the necropsy cirrhosis of the liver was found.

The Chair of Pathology at Oxford.

Dr. Dreyer, lecturer on pathology in the University of Copenhagen, and chief assistant to Professor Salomonsen, has been appointed to the newly made chair of pathology in the University at Oxford. At the recent meeting of the British Medical Association at Oxford, he distinguished himself in the discussion on immunity. He is the son of Captain Dreyer of the Danish Navy and speaks English fluently.

Sir William Perkin.

Sir William Perkin, F.R.S., the eminent chemist and founder of the coal-tar industry, died at his residence at Harrow July 14, from double pneumonia, after an illness of four days. At 17 he was private assistant to Professor Hoffmann in his research laboratory. Seeing the importance of preparing quinin artificially he attempted to make the basic substance anilin his starting point and submitted it to a process of oxidation. The result was an intense purple color (anilin purple or mauve). Before he was 20, with the assistance of his father, he proceeded to construct works for the manufacture of the dye on a considerable scale. Later he discovered a method for the manufacture of alizarin (artificial madder). He also produced artificial indigo and synthetically prepared perfumes. His most important research in pure science was the investigation of magnetic rotation, the application of which has done much to elucidate the composition of compounds and their molecular weights.

Therapeutics

[It is the purpose of this department to outline an up-to-date management of disease, to suggest scientific treatment for diseased conditions, and to present prescriptions that are simple, useful and palatable. Prescriptions are written in both the metric and apothecaries' systems, but the amounts of the ingredients are NOT exact translations of one system into the other, but quantities convenient for pharmacist and physician. It should be understood that solids are weighed in grams or fractions of grams, while liquids are measured in cubic centimeters; that a teaspoon holds five cubic centimeters, i. e., more than a fluid dram, hence a 100 cubic centimeter preparation will contain twenty doses.]

Intermittent Malarial Fever.

Intermittent fever may be of the tertian or quartan variety, depending on the type of the plasmodial infection. The quotidian type, or where there are daily chills, is due to two sets of tertian germs, each set maturing on alternate days. This is more likely to be the form of malarial fever when it occurs in young children. In any of these types of malarial fever there is always an intermission, i. e., a period without fever.

The symptoms of malarial fever are: Chill, fever, headache, backache, vomiting, sweating, period without fever; recurrence of above symptoms.

If all, or any two or three of these symptoms, are present and have recurred periodically, the diagnosis is almost certain and quinin should be given. If the case is atypical the blood should be examined and the plasmodia found before large doses of quinin are justifiable. In other words, patients with beginning typhoid fever, la grippe, cerebrospinal meningitis, bowel infection and cholecystitis should not be cinchonized, and *then* malarial fever ruled out by the continuance of the symptoms.

Other symptoms frequently occurring with malarial fevers are yawning, herpes on the lips and sometimes urticaria; the latter, however, is probably more often due to irritation of the gastrointestinal tract from quinin. In some seasons diarrhea frequently occurs with the chills and fever, and sometimes diarrhea is malarial in origin when there are no chills.

Most chills occur in the morning, probably because that is the exact period of the growth of the germ, infection most frequently taking place in the evening, or night.

The malarial parasites enter the red blood corpuscles, gradually eat them up, so to speak, and finally burst the capsule walls. To produce a chill it takes a large number of such plasmodia to mature at once. A small number will produce symptoms, but not cause a paroxysm, hence the periodical malaise and bad feelings many days before the typical malarial chill. After the paroxysm there is more or less temporary anemia, depending on the number of red cells that were infected. Whether the paroxysm is caused by the liberation of some toxin at the time of the rupture of the red blood corpuscles which, reaching the nervous system, causes the chill, or whether such a sudden breaking up of the blood corpuscles acts alone as a shock to the system, we do not know. The fever that follows is the reaction of the system from the chill. The headache is largely due to the local disturbance of the circulation in the brain, possibly to a blocking up of broken-down red corpuscles in some of the smaller vessels of the brain. The vomiting is doubtless due to this cerebral congestion. The intense backache is largely due to the congestion and blocked condition of the kidney vessels from the same red corpuscle débris, which, if severe, causes hemoglobinuria or hematuria of greater or less degree. The organ that suffers the most in malarial fever is the spleen, which is always more or less enlarged, especially after severe chills, it being probably loaded with the remains of broken-down red corpuscles.

The malarial parasite may exist in the blood for a long time without causing symptoms, even as long as eighteen days and some cases are on record of even a longer period of incubation. These rare cases account for the occurrence of malarial fever in regions where this infection is unknown.

A blood count will, of course, show a diminished number of red corpuscles, while leucocytosis is an exception in malarial fever.

The treatment is: 1. Prophylactic. 2. Treatment of the paroxysm. 3. Treatment during the intermission. 4. Treatment of the convalescence.

I. PROPHYLAXIS.

Prophylaxis is to take precautions against mosquito bites. This means to sleep upstairs, when possible, and, when in a malarial region, to be properly protected by mosquito netting, etc. Build up the general health if it is depressed, as all conditions of debility, whether chronic debility or the acute debility found in the convalescent from some acute disease, tend in malarial districts to allow the malarial plasmodia to get a footing in the system. All conditions of anemia should be carefully treated. If one goes to a malarial district, certainly for a time, prophylactic doses of quinin should be taken, viz., about 20 centigrams (3 grains) each day, in one dose. Individuals who have an indiosyncrasy against quinin should not remain in a malarial region.

II. THE TREATMENT OF THE PAROXYSM.

Here our whole aim should be to shorten the chill and fever stages and to precipitate or hasten the third or sweating stage.

If we first see our patient during the fever and the skin is dry, pulse bounding, head throbbing, patient possibly almost delirious, temperature up to 104 or 105, or even 106, our best treatment is an antipyretic in some form, and perhaps none is better for an adult than acetanilid, as follows:

℞.	gm.	
Caffeinæ citratæ	20	gr. iii
Acetanilidi	40	gr. vi
Sodii bicarbonatis	2	gr. xxx

M. et fac chartulas 2. Sig.: Take one powder, with a half glass of water, at once, and the other if the first is soon vomited or the fever persists after four hours.

No quinin should be given during this stage of the fever, as all of the uncomfortable symptoms will be increased.

During the sweating stage it is well to do nothing except what is directly necessary for the immediate comfort of the patient. The "let-alone" treatment is what he wants, and he is generally contented and glad to rest.

III. TREATMENT DURING THE INTERVAL.

The treatment during the interval of intermittent fever is, of course, the specific treatment with cinchona in some form. It is always a good plan to precede the quinin treatment with a dose of calomel followed, or not, by a saline purge, as seems best.

℞.	gm.	
Hydrargyri chloridi mitis.....	20	gr. iii
Sodii bicarbonatis	1	gr. xv

M. et fac chartulam 1. Sig.: Take at once.

Before beginning the administration of quinin, it must not be forgotten that the patient may possibly have an idiosyncrasy against it, and the inquiry should be made as to whether or not he knows if he can take quinin. Rarely an individual reacts enormously to this drug; swelling of the face, tongue and lips may occur, or he may have a severe dyspnea from the swelling of the mucous membrane in the air passages, or it may even cause, though sometimes denied, a hemoglobinuria. Urticaria is a not infrequent symptom when taking quinin, due, largely, to carelessness in taking it on an empty stomach. These cases of severe reaction are rare, but at least

several times in every physician's practice such an idiosyncrasy will be found. Sometimes a patient will have a very uncomfortable reaction, severe ringing in the ears and terrible restlessness, almost to a delirium, this occurring with the first dose or two, after which a tolerance is formed and there is no more trouble while the quinin is continued. At another period of taking quinin the same disturbances will recur. Other rare cases acquire no tolerance, and the drug must be avoided.

Now, when should quinin be given, and how much should be used? The best results are obtained from administering the largest dose from four to five hours before the expected chill, giving a similar dose either once or twice at other periods of the twenty-four hours before, but not giving any quinin during the time of, or directly after, the expected or actual paroxysm. Some of our best clinicians, however, believe that they get better results by giving a large dose of quinin during the sweating stage of the paroxysm. Either method is probably generally successful, but from a bacteriologic standpoint it is easier to kill a germ in maturity than at any other stage; hence this theory (and the practice is generally successful) of giving it when the germ is about mature. If there is opportunity for twenty-four hours of treatment before the expected chill, the physician should rarely allow another chill.

If there is time before giving the quinin it is always well to give calomel, as previous chills have certainly caused deposits of hemoglobin débris in the liver and its activity is not up to normal. Hence the bile is imperfect and there may be constipation or diarrhea, and a good cleaning out of the intestines with calomel will, in either case, be advantageous.

The adult dose of the sulphate of quinin for an intermittent fever is about 30 centigrams (5 grains) twice during the day, and double that amount, 60 centigrams (10 grains), four or five hours before the expected chill. These amounts should be reduced as soon as two periods have passed without a chill, but 2 or 3-grain doses three times a day after meals should be continued for at least two weeks unless it greatly disturbs the head. After the first week it is well to add to the prescription arsenic in 2 milligram (gr. 1/30) doses and some form of iron, as there is always more or less anemia.

Always give the quinin in elastic capsules or in freshly made capsules, if the patient is old enough to swallow them. If the patient is a child too young to taste, give the bisulphate of quinin in solution. If the child is older and yet not old enough to swallow the capsule, have some pills freshly made and then crumble them in a teaspoon of thick oatmeal, jam, apple sauce, or anything that the mother may substitute, and they may thus be administered without much trouble.

℞. Capsulas quininæ sulphatis flexibles ãã, gr. v. No. 20.

Sig.: Take according to directions. (See below.)

℞. For a child one year old.

	gm. or c.c.	
Quininæ bisulphatis	1	gr. xv
Aquæ menthæ piperitæ	100	fʒiii

M. Sig.: A teaspoonful every six hours, followed with plenty of water.

℞. For older children.

	gm.	
Quininæ sulphatis	2	gr. xxx

Fac pilulas 20. Sig.: A pill every six hours, or at times directed.

The following are directions written Saturday for the administration of quinin to an adult who has tertian malarial fever, chills having occurred in the mornings of Wednesday and Friday. Chill expected 10 a. m. Sunday.

	After breakfast.	After dinner.	After supper.
Saturday	Take 1 (5 gr.) cap.	1 (5 gr.) cap.	2 (5 gr.) cap.
Sunday	Take 2 (5 gr.) cap.	none	none
Monday	Take 1 (5 gr.) cap.	none	1 (5 gr.) cap.
Tuesday	Take 2 (5 gr.) cap.	none	none
W'dn'sday	Take 1 (5 gr.) cap.	none	1 (5 gr.) cap.
Thursday	Take 1 (5 gr.) cap.	none	none
Friday	Take 1 (3 gr.) cap.	1 (3 gr.) cap.	1 (3 gr.) cap.

There is no necessity for causing uncomfortable cinchonism when quinin is administered, provided that something is given which tends to relieve cerebral irritability and perhaps contracts the blood vessels of the brain. The drugs that will do this are morphin, bromids, hydrobromic acid and ergot, any of which administered synchronously with the quinin tends to prevent uncomfortableness from the latter. The best drugs to use for this purpose are the bromids, and a prescription containing sodium bromid, a gram (15 grains) to a teaspoonful of water, may advantageously be written at the time the quinin is ordered. Three grains, or 20 centigrams, of a bromid will prevent cinchonism from 1 grain, or 5 centigrams, of the quinin. Hence a teaspoonful of the bromid mixture, unless there is a good deal of idiosynerasy against quinin, will put a quietus on 30 centigrams, or 5 grains, of quinin.

℞.

	gm. or c.c.	
Sodii bromidi	20	ʒvi
Aquæ	100	fʒiii

M. Sig.: Five c.c., or a teaspoonful, contains 1 gram (15 grains) of bromid.

[In this prescription each fluid dram contains 15 grains of bromid.] Bromid should always be taken with plenty of water. The amount given at one dose and the frequency depend on the amount of quinin that is administered as above described.

Cinchonidia sulphate can be used as a substitute for quinin in practically similar doses, and occasionally may, perhaps, apparently cause less cinchonism than quinin. The action and results are practically the same. The hydrochlorid of quinin is thought by some to be preferable to the sulphate as it is more soluble, hence more quickly absorbed, and the dose is, therefore, somewhat less than that of the sulphate. Occasionally a patient may have less cinchonism by taking the quinin in small doses every three hours rather than in larger doses less frequently. The hydrochlorid (hydrochlorate), the salicylate and the hydrobromid (hydrobromate) cost more than the sulphate, and the hydrobromid does not prevent the occurrence of cinchonism, as was hoped. The so-called tasteless preparations of quinin are amorphous extracts of cinchona and generally are not as efficient or as active as quinin sulphate, and can not be relied on to prevent chills. The tannate of quinin may act somewhat as a tonic, but furnishes but little quinin to the system, being nearly insoluble in the gastrointestinal canal.

Suppositories of quinin have been used with some success. The dose must be larger than by the mouth by one-third at least. Irritation of the rectum, however, is readily caused. The oleate rubbed into the skin is not successful, as absorption of the quinin does not take place.

IV. THE TREATMENT OF THE CONVALESCENCE.

If there is a tendency to recurrence of the intermittent fever, a complete change of air for a short time will do more good than all drugs, especially if the patient can go to the seashore, take an ocean trip, or go into some high mountain air. If the spleen remains enlarged in these cases, good results are obtained by adding to the quinin treatment the daily administration of some active laxative. The success of the Warburgh's tincture, a nostrum of India, the secret of which was obtained by Professor MacLean of England, is due to its laxatives. There is nothing wonderful about the heterogeneous combination of drugs in this ancient mixture. It contains aloes, rhubarb, angelica, democratis, each 4 ounces; helenias, crocus, fennel, precipitated chalk, each 2 ounces; gentian, zedoaria, cubebs, myrrh, camphor, boletus laricis (purging agaric), each 1 ounce. These are digested for twelve hours in a water-bath with 500 ounces of proof spirit. It is then expressed and 10 ounces of bisulphate of quinin is added. The same advantage can be gotten more scientifically by administering aloes in tablet or pill, after supper, and a small

dose of a saline laxative in the morning, with the administration of an elastic capsule of 2 or 3 grains of sulphate of quinin three times a day, after meals.

Ammonium chlorid is, besides an expectorant, a stimulant to the liver, and also seems to aid in reducing the size of the spleen in these malarial cases. For this purpose it should be given in large doses as follows:

R.	gm. or c.c.	
Ammonii chloridi	10	3iiss
Syr. acidi citrici	50	fl℥iss
Aquæ ad	100	fl℥iii

M. Sig.: A teaspoonful (5 c.c.) with plenty of water, three times a day, after meals.

Miscellany

MINERAL WATERS.

The Claims of Londonderry, Hunyadi-Janos, Buffalo Lithia, Apollinaris, Etc., Viewed by the Food and Drugs Act.

An interesting article by Julius Greyer, in the *Midland Druggist*, entitled "The Incongruities of the Mineral Water Trade under the New Pure Food Law," is as follows:

"Congress assembled and the people have at last awakened to a stern realization of the faultiness of our many food and drug products, and the result is the Food and Drugs Act, 'An act for preventing the manufacture, sale or transportation of adulterated or misbranded or poisonous or deleterious foods, drugs, medicines and liquors and for regulating traffic therein and for other purposes.' This act has for its purport, first, the control of the proper and truthful labeling and advertising; second, the regulation of standards of purity; third, the abolishment of the use of harmful colors, preservatives and other ingredients, and, lastly, the general superintendence of the method of manufacture and sale of all food and drug products.

"After this general statement of the law it is but meet to say that its scope is broad and sweeping in effect, which is as it should be.

"The first and third are of such effect that if enforced in the mineral water trade will rectify all wrongs; in fact, the first will suffice of itself if we should leave sweet beverages out of consideration.

"At present there are three divisions of the mineral water business: First, the natural waters; second, the artificial waters, and, third, the sweet beverages. The adoption of a fourth is really necessary, as will be seen, namely, 'semi-natural' waters.

"The first division includes such waters as Apollinaris, Buffalo Lithia, Londonderry Lithia, Rhens, Bear Lithia, Hunyadi-Janos, Geneva Lithia and various artificial waters placed on the market as or under the dress of natural waters, such as Reichsquellen, Imperial Spring, Friedrichsquelle, etc.

"An examination of the methods of advertisement and labeling of these will suffice to point out the corrections to take place. Apollinaris, labeled a natural water, is the output of a German spring, freed of its iron by exposure to atmospheric air in large open tanks, then receiving an addition of salt equal to the weight of mineral ingredients naturally contained and then carbonated.

"Buffalo Lithia is a water coming from an American spring or springs, advertised as containing a definite quantity of lithia, namely, 2.25 grains per U. S. gallon, while the government analyses find much smaller amounts; and, according to the analysis made by Prof. F. Waller, the water contains but 0.018 grains of lithium bicarbonate per gallon.

"Rhens water, the product of a German spring, is freed of its iron, recarbonated and then bottled.

"Londonderry Lithia, an American water, advertised to contain 7.29 grains per gallon, contains but a spectroscopic trace of lithia, an amount too small to be expressed in weight.

"Bear Lithia, an American product, contains only a trace of lithia.

"Hunyadi-Janos, advertised as a natural Hungarian laxative water, is the manipulated mixture of more than one hundred springs.

"Geneva Lithia water, again an American product, said to contain 23.8 parts per million of lithia, is found to contain but 0.1 part; in other words, one would have to consume something like eighty gallons to get a single medicinal dose of the advertised drug.

"Reichsquellen, Imperial Spring, Friedrichsquelle, etc., are purely artificial products, put up by various manufacturers under a so-called stock lab l, purchased of a supply house.

"A review of these waters plainly shows a general inaccuracy of branding and labeling. Apollinaris, Hunyadi-Janos and Rhens would belong to the fourth class or semi-natural waters. Bear Lithia and Londonderry Lithia become types of misnomers and false branding, and will cease to exist as lithia waters. Buffalo and Geneva lithia waters are also misbranded, requiring radical corrections in their labels and literature. Reichsquellen, Imperial Spring, Friedrichsquelle, etc., are rank fakes, and will cease to exist entirely. It is a common thing for proprietors of natural waters to advertise the absence in their waters of organic matter, a gross misbranding, as no natural water exists free of it.

"A statement of the efforts of other countries and a review of some of their legal decisions may be of interest at this point. Germany was the first to start the cry of pure food, and proper branding in real earnest quickly followed by France. Then, after a lull of two years, our own United States picked up the cry, to be followed by the present mutterings in England.

"The decisions already reached in Germany in regard to mineral waters compel the Apollinaris Company to desist advertising and labeling their water as 'natural and absolutely pure,' imposing a heavy fine on such continuance.

"In the case of Rhens, the fact that the iron is removed, must be plainly stated on the label.

"Apollinaris, however, met its worst foe in France, which demanded that the water be termed artificial, owing to the extent of its manipulation, the result being that each bottle sold in France has 'Eau Artificielle' blown into it.

"The institution of proceedings in this country will result in similar decisions. For years Apollinaris has been entering this country duty free as a natural water, owing to the report of a blinded, misled, hoodwinked commission, appointed to investigate its claims. Such importation, under the new law, will, and ought to, stop. But we must be patient, as great reforms like this are worked out slowly.

"The second branch of artificial waters present the same, if not worse, conditions. For years such waters as artificial Vichy, seltzers, Kissingen, etc., have been put up by a motley crew of bottlers bearing no chemical or other resemblance to the waters whose names they bear; in fact, in most cases all are drawn from the same tank. Let me state here that to-day there are less than one-half dozen bottlers in this whole country who put up this class of goods honestly. This fact is exceedingly deplorable as these waters form such an immense and valuable branch of commerce. Artificial waters, honestly prepared with distilled water and proper chemicals in proper quantities are, as is admitted by most authorities, superior to the natural when removed from their source, as they contain no organic matter to start decomposition and putrefaction, as is the case with natural waters. The countries that have preceded us in this endeavor have decided that waters of this class, in order to bear these names, must simulate them exactly in composition.

"The third class, commonly termed sweets, embracing such as pop, Dewey, lemon soda, sarsaparilla, ginger ale, etc., have, owing to sharp and cheap competition, dropped to the very lowest ebb of purity and sanitary conditions. Sugar hardly ever enters into their composition, saccharin, a harmful coal-tar product, being its cheap substitute, glucose or some other substance furnishing the body lacking through absence of sugar. The law has taken a firm stand against such proceed-

ing in this and other countries, and the use of saccharin, glucose, etc., will give way again to sugar. Similarly cheap and adulterated essences and extracts will be displaced by pure and wholesome ones.

"The foregoing article casts a deep and black shadow over American mineral water products as they are to-day which shall be effectually dispersed by the new law properly and vigorously enforced.

"The abolishment of gross misbranding followed by truthful and explanatory labeling and inauguration of proper standards of purity, will give the people an oversight and choice of what they eat and drink."

Clippings from Lay Exchanges.

STEAMING BLOOD AND PRURIENT ABSCESSES.

"Berlin, June 8.—Professor ——— will succeed the late Professor ———. . . . The new chief surgeon . . . is the inventor of . . . the artificial steaming of the circulation of the blood, as a cure for prurient abscesses."—*Los Angeles Examiner.*

THE ATONY OF A TONY.

"Tony S——— . . . is dead. His taking off was tragical in its nature. A strong and hearty looking man of twenty odd years, we would have least expected death to knock at his door so soon. . . . He was taken violently ill of cramps in his bowels. . . . There was no surcease to his illness. As too often happens among the uninformed, or those who part with money to a physician with reluctance, instead of calling a physician, S——— explained his condition as best he could to a druggist, and asked him to mix him up something that would give him relief. This the druggist attempted to do. S——— had not had a passage of the bowels from Friday . . . to Monday. The remedy of the druggist failed to give him any relief. But his torture was unceasing all this time. On Friday, the day before his death, he called a physician, Dr. B———. Grasping at once the desperate situation in which he found his patient, Dr. B——— resorted at once to heroic measures. Every known remedy was applied, but none of them responded with the hoped for result in breaking through the obstruction of the bowels. . . . . Dr. J——— was called in consultation. They frankly stated to Mr. S——— that there was but a chance and that only one in a thousand to save his life and that was by an operation. . . . His abdomen . . . was found full of puss, as much as a gallon or more of it. Gangrene had set in. Death had set its seal on him when he called his physician on Friday. There was no hope for him then. He had slept on his opportunity to live by not calling a physician on Sunday to give him practical, intelligent treatment. Some there are who will blame the hospital service at F———. Only those will do this who do not stop to think. The record of loss in the F——— Hospital is but four-tenths per cent. There is not an institution of the kind in the commonwealth that has a better record. This should be answer sufficient to such critics."—*Anaheim* (Cal.) *Plaindealer.*

WORLD WONDER—KEEN KNIFE—MARVELOUS TECHNIC—NERVE—SKILL—SPECIALTY—PANTING BOSOM—SECRET SOLUTION—GOSH!

"To live for thirty days, to sit up and have one's photo taken in the interests of higher medical science, after having had one's heart literally taken out of your body and laid in the two open palms of a surgical nurse. This is the latest world wonder of modern surgery, and A——— McC———, of Los Angeles, is the man with the marvelous vitality and Dr. W——— P. T———, a celebrated surgeon of the Pacific slope, was the wonder worker, whose keen knife and marvelous technic have so far won the battle against death.

"For nearly half an hour McC——— lay and breathed and the blood in his body was pumped through his arteries and veins by a human heart that lay where all eyes could see it and several inches clear from the man's gaping bosom. The nerve of the surgeon was only surpassed by his skill, Dr. T——— has for years studied the heart and made a specialty of surgical and medical treatment of the most important organ in the human body. McC——— was run into by a great buck rake. A prong of steel entered the body, pushed the heart four inches out of place, cut three ribs in two and left the man in such condition that any ordinary doctor would merely have stood by to wait for death. But Dr. T——— at once had him taken to his private operating hospital, cut wide open the torn and panting bosom of the victim—quickly took out the beating heart and laid it slowly but surely pulsating in the two open hands of his best assistant. The heart beat quietly and the blood poured slowly through the arteries, which were pulled out of the breast several inches. Finally, when all had been sewed up and the torn ribs mended, Dr. T——— wiped off the heart with a secret solution and replaced it in the man's chest. He finally tied the loosened arteries and closed the great hole in McC———'s bosom. This was weeks ago. The man not only still lives, but shows marked improvement."—*Salt Lake City Inter-Mountain Rep.*

Status of Asiatic Cholera Throughout the World.—Information published by the Public Health and Marine-Hospital Service in the *Public Health Reports* gives the status of Asiatic cholera during the present calendar year up to July 5, throughout the world, as follows:

PHILIPPINE ISLANDS.—Present in four provinces, viz., Capiz, Negros Occidental, Rizal and Samar, in January and February, but not in epidemic form, only scattered cases being reported.

INDIA.—Present at seven localities, with no marked prevalence except at Kashmir, where the disease is declared epidemic, with a total of 7,089 cases and 3,853 deaths since the outbreak, which occurred late in 1906, to May 17, 1907. At Calcutta cholera was present continuously from the first week of the year to May 11; at Bombay in February, March, April and May; at Madras a few fatal cases were reported each month from January to May.

CEYLON.—Present at Colombo in January, February and April, with a total of 7 cases and 7 deaths.

SIAM.—Present in January.

STRAITS SETTLEMENTS.—From March 10 to April 6, 2 deaths were reported.

Research in Tropical Diseases in Australia.—The study of tropical diseases has received immense impetus in recent years, and Australia, which lies within the tropics, is taking up scientific inquiry along this line. The bishop of North Queensland has taken up the question and has written to the various Australian universities outlining a scheme for the encouragement of research in the diseases of tropical Australia. The Townsville (Queensland) hospital committee has undertaken to provide an isolated building in the grounds of the hospital as an institute for the work of investigation, the oversight and direction of the institute to be in the hands of the medical faculties of the universities of Adelaide, Melbourne and Sydney.

Queries and Minor Notes

DIAGNOSIS AND TREATMENT OF RABIES.

MER ROUGE, La., July 11, 1907.

To the Editor:—Please state in THE JOURNAL the present status of the treatment of rabies in the Pasteur institutes. What can be done in the way of making a diagnosis by an examination of the brain or spinal cord of a dog suspected of having rabies? In doubtful cases what steps should be taken by the attending physician? As full a statement of the matter as your space will allow would be appreciated by me and possibly by many others as well. E. W. HUNTER.

ANSWER.—If a person bitten by a dog suspected of rabies is seen immediately, the treatment should be the same as for snake bite; that is, if the wound is on a limb, a constrictor should be placed above the bite, and the virus removed by free bleeding as far as possible. The wound should then be cauterized, best by heat. Cauterization, no matter how thorough, is probably of little value even a few hours after the person is bitten, and even if done most promptly it does not guarantee protection against infection, as has been shown experimentally with animals. Apparently the virus is carried from the wound into the circulation with great rapidity. However, it is possible that even a tardy cauterization may delay somewhat the period of incubation, which delay is very desirable in permitting time for the application of the Pasteur treatment.

The next effort should be directed to learning positively whether or not the dog has rabies. By far the best evidence is obtained by keeping it in safe confinement for some time, for if rabic it will die in a few days at the most. If the dog has been killed, which is most frequently the case, the brain and spinal cord, or the entire body, should be sent to the nearest laboratory equipped for examination of pathologic materials. Even in case the dog dies a natural death it is well to make sure that the cause of its death was hydrophobia by means of laboratory investigation. By microscopic examination of the central nervous system one familiar with the histologic changes of rabies can make an almost positive diagnosis in a few hours by seeking for the "Negri bodies." Examination of hundreds of animals by observers all over the world seem to have established the specific connection of these structures with hydrophobia, although it has not been decided whether or not they represent the etiologic factor of the disease. Areas of round-cell infiltration in the central nervous system, called the "rabic tubercles" of Babes, and proliferation of the nuclei in the capsules of the ganglion cells in the cervical ganglia (the Van Gehuchten and Nelis reaction) are also characteristic of rabies; but apparently they are not so specific and not so constantly present in rabies as are the Negri bodies. Bertarelli states that in more than 1,000 examinations the Negri bodies were never found in animals that were free from rabies, and were missed in only three rabic animals. The method advocated for the finding of these structures is as follows: Pieces of the hippocampus major are hardened in alcohol or bichlorid solution, imbedded in paraffin, and stained in Mann's solution (35 c.c. of 1 per cent. aqueous solution of methylene blue, 35 c.c. of 1 per cent. solution of eosin and 100 c.c. of distilled water). Hematoxylin and eosin staining is also satisfactory if the eosin stain is not too strong. The microscopic findings can be controlled by inoculation of rabbits with emulsions of the nervous tissue. As the rabic virus passes through Berkefeld filters, it is said to be possible by using filtered emulsions to determine the presence of rabies even in putrid material, of which microscopic examination is impossible. Although the inoculation method is more positive than the histologic method of diagnosis, yet the latter is of great value in giving immediate results, whereas the period of incubation in inoculated rabbits is two weeks or more.

It must always be remembered that negative microscopic findings are not conclusive evidence of the absence of rabies, and if the history of the attacking animal is suspicious it may be the policy of safety to give the patient the benefit of the Pasteur treatment without waiting for the results of animal inoculation. At the present time the value of the Pasteur treatment must be accepted as proved, it having been tested in many thousands of cases; but its value is purely prophylactic. Once the symptoms of rabies have manifested themselves the patient is beyond cure; hence the imperative need of promptness in applying the Pasteur treatment. This consists in the subcutaneous injection of emulsions of the spinal cords of rabbits infected with rabies, which have been dried for varying periods of time up to fourteen days. It requires about fourteen days to establish immunity fully in man, so it is necessary that the treatment be begun at least that long before the disease is likely to manifest itself. As the incubation period in man is usually from twenty to sixty days, but may be as short as seven to ten days, it is evident that the time elapsing before treatment is begun needs to be as short as possible; in cases where urgency demands, it is possible to hasten the immunization process somewhat by intensive treatment. It has been established convincingly that the treatment itself is without danger, and hence there need be no hesitation about having it applied. The nature of the material used in immunizing (dried spinal cords of infected rabbits) is such that it can not be put on the market for use by practitioners, but must be continually prepared fresh in laboratories equipped for the work; hence the necessity for the existence of Pasteur institutes in the centers of population throughout the country. The results obtained are excellent, the mortality among treated cases being but about 0.5 per cent., and when there are deducted the cases which develop symptoms of the disease before the process of immunization is complete the mortality is said to be as low as 0.18 per cent.

SCROTAL ICE BAG TO STOP PULMONARY HEMORRHAGE.

MINNEAPOLIS, July 22, 1907.

To the Editor:—Your answer to L. P., July 13, 1907, does not seem to accord with the scientific principles underlying modern hydrotherapy. You state that "the method and its theoretical explanation are probably fallacious." Through the indefatigable work of Winternitz and his disciples, it has been demonstrated that certain surface areas of the body standing in reflex relationship to distant internal organs can be made use of to exert a definite influence on the organs whose corresponding area is treated with applications of cold water. In local hydrotherapy, which nowadays plays such an important part, these very conditions are extensively made use of. These effects comprise not only a vasodilatation and contraction of the blood vessels, but also a contraction of the unstriped muscle tissues in the internal organs of the body. The muscles in the smaller air-passages, in the lungs, the liver, the kidneys, etc., can be acted on reflexly by the influence of cold on those surface areas that stand in corresponding relationship to the internal organs. A few examples might here be given. If we permit a stream of cold or very warm water to strike the abdomen, an immediate and powerful contraction of the abdominal muscles takes place and intestinal peristalsis is noticeably increased. A cold application to the face and neck, intense and short, causes a dilatation of the vessels of the brain. These vessels contract if the application is continued for a longer period of time. If cold is applied to the neck and chest for a short period of time, there is at first an increased frequency of pulse and respiration which after a while becomes less frequent. A prolonged dipping of the hands in cold water produces a contraction of the blood vessels of the brain and mucous membrane of the nose and can to advantage be used in combating con estion of the brain. A prolonged cold foot-bath causes uterine contraction and can therefore be used in cases of uterine hemorrhage. A short application to the feet of a stream of cold water under high pressure dilates the uterine vessels and is therefore useful in amenorrhea. A prolonged cold application to the upper portion of the back relieves the mucous membrane of the nose from congestion and can be utilized in epistaxis. A short application of a stream of cold water on the lower part of the sternum or epigastrium stimulates the kidneys and increases their activity. Cold applications to the thighs counteracts congestion of the lungs. I have never used an icebag on the scrotum in pulmonary hemorrhage, but it would appear probable that this region, so near that of the thigh, might possess an extension of the latter area's qualities in this particular. It is also to be remembered that an icebag on the scrotum would be apt to touch one or both thighs, and, through the action here exerted, would come within the well-recognized law in hydrotherapy above mentioned. Is it not likely that this explains the results reported by our colleagues in Colorado and Texas?

A. E. HEDBACK, M.D.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending July 27, 1907:

Reynolds, F. P., surgeon, granted thirty days' leave of absence to take effect on arrival in the United States.

Davis, W. B., deputy surgeon-general, granted nine days' leave of absence.

Shaw, H. A., surgeon, granted thirty days' leave of absence.

Winter, F. A., surgeon, granted five days' leave of absence.

Smith, H. M., asst.-surgeon, ordered to report in person to the medical superintendent, Army Transport Service, San Francisco, for duty as surgeon of transport *Warren*, to sail from that place August 3, 1907, and on arrival at Manila, to report in person to the commanding general, Philippines Division, for duty.

Kirkpatrick, T. J., asst.-surgeon, ordered to Washington Barracks, D. C., for observation and treatment at Army General Hospital.

Lambert, S. E., asst.-surgeon, resignation accepted to take effect July 27, 1907.

Jones, P. L., asst.-surgeon, assigned to temporary duty as surgeon of the transport *Kilpatrick* during the trip of that transport, leaving Newport News, Va., about Aug. 15, 1907, for Havana, Cuba, and return. On return to Newport News will rejoin station at Camp Captain John Smith, Jamestown Exposition, Va.

Jarrett, A. R., cont.-surgeon, ordered to return from Fort Terry, N. Y., to his proper station, Fort Hamilton, N. Y.

Stanton, S. C., cont.-surgeon, granted leave of absence for seventeen days.

Mills, F. H., cont.-surgeon, ordered to return from Fort Snelling, Minn., to his proper station, Fort Assiniboine, Mont.

Van Kirk, H. H., cont.-surgeon, ordered from Fort Logan, Colo., to Fort Duchesne, Utah, for temporary duty.

Munn, W. A., cont.-surgeon, relieved from duty at Fort Duchesne, Utah, and ordered to Denver for annulment of contract, at his own request.

Tignor, E. P., dental surgeon, arrived at Fort Adams, R. I., for duty.

Wing, F. F., dental surgeon, granted an extension of twenty days to his leave of absence.

Sorber, O. M., dental surgeon, ordered from San Francisco, to Fort Snelling, Minn., for duty.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending July 27, 1907:

Bertolette, D. N., medical director, ordered to the Naval Recruiting Station, Philadelphia, August 5.

Hoen, W. S., P. A. surgeon, detached from the *Philadelphia* and ordered to the *California* when commissioned.

Backus, J. W., P. A. surgeon, detached from the *Amphitrite* when placed out of commission and granted leave for one month.

Munson, F. M., P. A. surgeon, detached from the Naval Medical School, Washington, D. C., and ordered to the *Philadelphia*, and to additional duty at the Navy Yard, Puget Sound, Wash.

Kelley, H. L., asst.-surgeon, detached from the Naval Hospital, Washington, D. C., and ordered to the *Constellation* and to additional duty at the Naval Training Station, Newport, R. I.

Steadman, W. G., Jr., asst.-surgeon, ordered to the *Franklin*.

Donelson, M., asst. surgeon, ordered to the *Stringham*.

Huff, E. P., asst.-surgeon, ordered to the naval proving ground, Indian Head, Md.

Baker, M. C., asst.-surgeon, ordered to the Midway Islands.

Dollard, H. L., asst.-surgeon, ordered to the Naval Hospital, Newport, R. I.

Curtis, E. E., asst.-surgeon, ordered to the Naval Hospital, Norfolk, Va.

Casto, D. H., asst.-surgeon, ordered to the Naval Recruiting Station, Indianapolis.

Smith, H. L., asst.-surgeon, ordered to the Naval Recruiting Station, Omaha.

Murphy, J. A., surgeon, commissioned surgeon from March 20, 1907.

Johnson, M. K., surgeon, detached from the Naval Hospital, Norfolk, Va., and ordered to the Naval Station, Charleston, S. C.

Evans, S. G., surgeon, detached from the Naval Hospital, Charleston, S. C., and ordered to the Naval Hospital, Washington, D. C.

Murphy, J. F., P. A. surgeon, detached from the *Scorpion* and ordered to the Naval Station, Culebra, W. I.

Holloway, J. H., P. A. surgeon, detached from the *Indiana* and ordered to duty with marines at Camp Columbia, Cuba, sailing from New York, about August 3.

Rennie, W. H., P. A. surgeon, detached from the *Wasp* and ordered to the *Kentucky*.

Heiner, R. G., P. A. surgeon, detached from duty with marines at Camp Admiral Harrington, near Williamsburg, Va., and ordered to the *Wasp*.

Angwin, W. A., asst.-surgeon, detached from duty with marines at Camp Columbia, Cuba, and ordered to the *Scorpion*.

Hull, H. F., asst.-surgeon, detached from the Naval Station, Culebra, W. I., and ordered home to wait orders.

Boland, M., asst.-surgeon, ordered to the Naval Hospital, Norfolk, Va., for duty.

Hermesch, M. R., asst.-surgeon, ordered to the Naval Hospital, New York, for duty.

Belknap, J. L., asst.-surgeon, detached from the *Kentucky* and ordered to duty with marines at Camp Admiral Harrington, near Williamsburg, Va.

McGuire, L. W., acting asst.-surgeon, ordered to the Naval Hospital, Boston, for duty.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ended July 24, 1907:

Stoner, G. W., surgeon, directed to proceed to El Paso, Texas, San Diego, Cal., and other ports on the Pacific coast and Canadian border for special temporary duty, on completion of which to join his station at Ellis Island, New York.

McMullen, John, passed asst.-surgeon, granted extension of leave of absence for seven days.

McMullen, John, passed asst.-surgeon, granted extension of leave of absence for five days.

von Ezdorf, R. H., passed asst.-surgeon, granted leave of absence for two days.

King, W. W., passed asst.-surgeon, directed to proceed from Tuckerton to Atlantic City and return for special temporary duty.

Stansfield, H. A., passed asst.-surgeon, granted leave of absence for three months from July 12, 1907, with permission to go beyond the seas.

Holt, J. M., passed asst.-surgeon, leave of absence granted for two months, from July 20, 1907, amended to be effective July 7, 1907.

Vogel, C. W., passed asst.-surgeon, relieved from duty in the Philippine Islands and directed to return to the states, reporting his arrival at San Francisco.

Creel, R. H., asst.-surgeon, relieved from duty in the Philippine Islands and directed to return to the States, reporting his arrival at San Francisco.

Lyall, R., acting asst.-surgeon, granted leave of absence for three days from July 11, 1907, under Paragraph 210, Service Regulations.

Owen, H., acting asst.-surgeon, leave of absence granted for thirty days, from June 1, 1907, amended to be effective from Aug. 1, 1907.

Rodman, J. C., acting asst.-surgeon, granted leave of absence for fifteen days, from July 1, 1907.

Seavey, L. T., acting asst.-surgeon, granted leave of absence for twenty-one days, from Aug. 15, 1907.

Wells, R. S., acting asst.-surgeon, granted leave of absence for thirty days from June 1, 1907, account of sickness.

Wells, R. S., acting asst.-surgeon, granted leave of absence for thirty days, from July 1, 1907.

APPOINTMENT.

Dr. Harry M. Friedman, appointed as acting asst.-surgeon for duty at Philadelphia.

Dr. Louis A. Thunig appointed acting asst.-surgeon for duty at Stapleton, N. Y., declined appointment.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended July 26, 1907:

SMALLPOX—UNITED STATES.

California: San Francisco, July 6-13, 2 cases.

Illinois: Dundas, June 10-30, 3 cases; Tolono, June 1-July 19, 5 cases.

Indiana: Indianapolis, July 7-14, 2 cases; Lafayette, July 8-15, 2 cases; South Bend, July 6-20, 2 cases.

Kentucky: Covington, July 13-20, 1 case; Louisville, July 11-18, 3 cases.

Louisiana: New Orleans, July 11-18, 1 case, 1 death.

Massachusetts: Boston, July 13-20, 1 case; Lawrence, July 6-13, 1 case.

Michigan: Detroit, July 6-20, 5 cases.

Minnesota: Stillwater, June 1-30, 1 case.

Missouri: St. Louis, July 6-13, 1 case; St. Joseph, July 6-13, 2 cases.

North Carolina: Greensboro, July 13-20, 12 cases.

Tennessee: Memphis, June 29-July 13, 4 cases.

Texas: San Antonio, July 6-13, 1 case.

Virginia: Richmond, July 6-13, 1 case.

Washington: Tacoma, July 6-13, 1 case.

Wisconsin: Milwaukee, July 6-13, 2 cases.

SMALLPOX—INSULAR.

Philippine Islands: Manila, June 2-9, 1 case varioloid.

SMALLPOX—FOREIGN.

Africa: Lourenco Marquez, May 1-31, 4 deaths.

Austria: Vienna, June 22-29, 1 case.

Brazil: Bahia, May 25-June 29, 36 cases; Para, June 29-July 6, 14 cases, 5 deaths; Pernambuco, May 1-15, 48 deaths; May 15-31, 64 deaths; Rio de Janeiro, May 26-June 16, 5 cases, 1 death.

China: Hankau, June 1-8, 2 cases (foreign); Hongkong, May 25-June 1, 5 cases, 3 deaths; Niuchwang, June 1-8, 2 cases (foreign); Shanghai, June 1-15, 10 cases (foreign), 56 cases (native).; Tientsin, June 1-8, 2 cases (foreign).

Ecuador: Guayaquil, June 22-29, 2 deaths.

France: Marseilles, June 1-30, 136 deaths; Paris, June 29-July 6, 6 cases, 3 deaths.

Great Britain: Liverpool, June 29-July 6, 1 case.

Greece: Piraeus, June 29-July 6, 1 case.

India: Bombay, June 11-18, 2 deaths; Calcutta, June 1-8, 22 deaths.

Italy: General, July 4, 40 cases; Turin, June 16-30, 3 cases.

Madeira: Funchal, May 31-June 7, 70 cases, 11 deaths.

Mexico: Aguas Calientes, July 6-13, 4 deaths.

Portugal: Lisbon, June 22-29, 7 cases.

Russia: Odessa, June 22-29, 2 cases; Riga, June 22-29, 5 cases.

Spain: Barcelona, June 20-30, 2 deaths; Madrid, May 1-31, 8 deaths.

Turkey in Europe: Constantinople, June 23-30, 2 cases.

Turkey in Asia: Bagdad, June 1-8, present; Bassorah, June 1-8, present; Damascus, June 15-22, present.

YELLOW FEVER.

Brazil: Manaos, June 30-July 6, 1 death; Para, June 29-July 6, 3 cases, 1 death; Rio de Janeiro, May 26-June 16, 4 cases, 3 deaths.

Cuba: San Nicolas, July 22, 1 case.

CHOLERA.

India: Bombay, June 11-18, 2 deaths; Calcutta, June 1-8, 40 deaths; Kashmir Province, June 3-10, 2,293 cases, 1,315 deaths; Rangoon, June 1-8, 1 death.

PLAGUE—INSULAR.

Hawaii: Honolulu, July 22, 1 case, 1 death.

PLAGUE—FOREIGN.

Brazil: Rio de Janeiro, May 26-June 16, 5 cases, 3 deaths.

China: Hongkong, May 22-June 1, 10 cases, 9 deaths.

India: General, May 25-June 1, 42,705 cases, 38,992 deaths; Bombay, June 11-18, 27,148 cases, 25,060 deaths; Calcutta, June 1-8, 1 case, 68 deaths; Madras, June 8-14, 1 death; Rangoon, June 1-8, 58 deaths.

Persia: Bahrein Islands, June 8-15, present; Bushire, June 8-15, present.

Society Proceedings

COMING MEETINGS.

Minnesota State Medical Association, Duluth, August 13.
Wisconsin State Medical Society, Superior, August 21-23.
Ohio State Medical Association, Cedar Point, August 28.
Medical Society of the Missouri Valley, Council Bluffs, Iowa, Sept. 5
Washington State Medical Association, Seattle, September 10-12.
Colorado State Medical Society, Glenwood Springs, Sept. 17-19.
Amer. Assn. of Obstetricians and Gynecologists, Detroit, Sept. 17-19.
American Electro-Therapeutic Assn., Boston, Sept. 17-19.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Regular Meeting, held May 22, 1907.

The President, DR. JAMES TYSON, in the Chair.

Thoracic Aneurism Successfully Treated by Wiring.

DR. JAMES M. ANDERS and DR. J. P. MANN reported the case of a man, 36 years of age, who four months previous to admission to the hospital, had had a specific infection. His last illness dated back four years, when he developed pain in the retro-sternal region aggravated by exertion and mental excitement, and attended with slight bulging to the right edge of the sternum. He had been treated by means of rest and other agencies, and was practically cured, according to his own statement. He was admitted to the hospital early in 1907, when the bulging to the right of the sternum had increased to the size of a small orange. Seven yards of wire had been introduced by Dr. Mann. Pulsation became markedly lessened and the mass diminished in size, but bulging appeared higher up and rapidly increased in size. This was wired with the same result. Some time later the necrotic area on the summit of the tumor mass was cast off, fully exposing the wire at the base of the sac. Granulation took place, gradually pushing the wire out until about two-thirds had been extruded at the time of exhibiting the patient and the sac had become occluded. The case was remarkable in that prior to the wiring perforation seemed inevitable.

Aneurism of Arch of Aorta Treated by the Moore Coraddi Method.

DR. JUDSON DALAND exhibited this patient, a man aged 45, with history of syphilis and rheumatism. He had been seized with tachycardia and dyspnea. The usual signs of aneurism were elicited over the right chest. The Roentgen ray examination confirmed the clinical diagnosis, and a re-examination after operation showed the wire *in situ*. Fourteen feet of silver wire were introduced into the aneurismal sac through which a galvanic current was passed. The patient was placed at absolute rest and given 30 grains of iodid of sodium, thrice daily, accompanied with an appropriate diet. Improvement took place and a marked diminution was shown in the expansile pulsation of the tumor, with great relief from pain and dyspnea, and he was discharged 42 days after wiring. Eighty-one days after the operation he reported himself free from all symptoms, except an occasional slight pain over the aneurism, and he is able to walk fourteen squares without discomfort. The heaving pulse has greatly diminished. Recumbent, systolic pressure was 118 mm., diastolic pressure 52 mm., mean pressure 85 mm., pulse 84. Sitting position, systolic pressure was 125 mm, diastolic pressure 45 mm., mean pressure 80 mm., pulse 96. Dr. Daland also showed a specimen of aneurism into which 20 feet of gold wire had been introduced illustrating the manner in which wire enters the sac and coils within it, and how in connection with galvanism a firm clot is produced.

Chiroplasty.

DR. J. P. MANN exhibited a young woman who in working in front of a mangle had had her hand crushed and burned so that the fingers became welded together and grew to the palm of the hand. After separating the fingers from the palm of the hand and from each other, a slit had been cut in the leg just below the buttock, a strip of skin dissected loose, except at its extremities. The hand was placed in position underneath the strip of skin with the palm outward, properly adjusted and bound. In ten days there was firm adhesion of the skin to the palm of the hand. With the cutting of the skin between the fingers to give free use of the fingers the operation would result in giving a very useful hand.

The Sulphonal Habit.

DR. JAMES E. TALLEY referred to a case of the sulphonal habit in a patient who, following an operation, began to take 10 to 15 gr. doses of sulphonal, which was continued for five years without symptoms. There was then some mild disturbance, when the dose was increased to 15 and then to 20 grains, without either acute or chronic poisoning. In the study of the histories of such cases a practical clinical point brought out was that the cases showing symptoms are those in which constipation is pronounced.

Conservative Treatment for Sarcoma.

DR. W. WAYNE BABCOCK and DR. G. E. PFAHLER pointed out that while advances in operative surgery have been of great value in decreasing the mortality from cancer, they have had relatively little influence in decreasing the dangers of sarcoma. There is little promise for advance in treating sarcomas by more desperate and radical operative measures, for here sacrificial surgery has reached its extreme limits, often without any decrease, and, unfortunately, frequently with a decided increase, in the early mortality of the affection. The course in sarcomas frequently suggests a systemic infection with local outbreaks determined by operative or other forms of trauma, in many features resembling tuberculosis. The authors believe that, undoubtedly, in cases of recurrent sarcomas, and probably in primary sarcomas, a greater duration of life with a minimum of suffering may be obtained by conservative rather than by the very radical operative measures. They point out that of the very malignant tumors, sarcomas are most prone to spontaneous retrogression; or to decrease in size or disappearance under Roentgen ray treatment, certain toxins and after pyogenic infections.

The treatment advocated consists chiefly of a very thorough and prolonged course of Roentgen ray treatment and prevention of sapremia by simple, and, if necessary, repeated subcapsular enucleation of the sarcomatous masses, together with the local use of strong solutions of methylene blue and a general roborant treatment. In a limited number of cases the use of mixed toxins, as proposed by Coley, is valuable. The authors have seen no favorable results from the use of trypsin. The Roentgen rays constitute the most potent single method at present known for restraining the growths of sarcomas. The rays, however, by destroying the lymphatics, retard the absorption of necrotic tumor masses and surgical aid must be invoked to free the body of these. The tendency to metastasis is evidently reduced by Roentgen ray treatment.

Marriages

HARRY GARRISON, M.D., to Miss Matilde Louise Metz, both of Philadelphia, July 10.

EMIL H. HENCKLER, M.D., to Miss Elizabeth Emily Bauman, both of St. Louis, July 17.

GEORGE ROOT MILLER, M.D., to Miss Ella Estell Taintor, both of Hartford, Conn., July 18.

ARTHUR E. PRICE, M.D., Chicago, to Miss Louise Higman of Benton Harbor, Mich., July 23.

FRANK A. BOET, M.D., to Miss Mabelle H. Thomas, both of Grand Rapids, Mich., June 29.

THOMAS J. CONWELL, M.D., Bessemer, Ala., to Miss Ida Azbill of Jonesboro, Ala., July 17.

ALBERT DEKALB PARROT, M.D., Kinston, N. C., to Miss Mary Fletcher, at Richmond, Va., July 23.

CHARLES M. BYRNES, M.D., Charlottesville, Va., to Miss Nellie Pennington, at Baltimore, July 19.

HUGH MCGAVIN, M.D., Plum Coulee, Manitoba, to Miss Tina Bryants of Morden, Manitoba, at Winnipeg, June 19.

WALTER T. FLANAGAN, M.D., Ashland, Ky., to Miss Blanche L. Hackworth of Knoxville, Tenn., at Chicago, July 15.

Deaths

Charles Hodge Boardman, M.D. University of Pennsylvania, Department of Medicine, Philadelphia, 1862; formerly a practitioner of St. Paul, Minn.; at one time medical director of the Northern Pacific Railroad, and professor of medical jurisprudence in the University of Minnesota from 1887 to 1890, died at his home in Brooklyn, July 17, from heart disease, aged about 70.

Oliver A. LaCrone, M.D. University of Michigan, Department of Medicine and Surgery, Ann Arbor, 1886; a member of the American Medical Association, and former president of the Kalamazoo (Mich.) Academy of Medicine, died in Mercy Hospital, Chicago, June 18, after an operation for disease of the gall tract, aged 48.

Patrick L. Barry, M.D. University of Maryland School of Medicine, Baltimore, 1893; a member of the Arkansas Medical Society and Garland County Medical Society; for five years chief surgeon of the Mexican International Railroad, died at his home in Hot Springs, Ark., July 20, aged 35.

Alfred C. Phillips, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1881; a member of the Illinois State and Jo Daviess County medical societies; of Apple River, Ill., died at the home of his sister in Omaha, July 19, from nephritis, after an illness of six months.

Marion William Swarthout, M.D. Grand Rapids (Mich.) Medical College, 1906; formerly of Honor, Mich., is reported to have committed suicide by shooting himself at his home in White Cloud, Mich., July 18, aged 44.

George W. Ronald, M.D. University of Louisville (Ky.) Medical Department, 1848; surgeon in the Army during the Civil War, died at his home in Louisville, July 17, from heart disease, after a long illness, aged 84.

Alphonse L. M. De Seay, M.D. Medical Department of the Tulane University of Louisiana, New Orleans, 1882; of Ruston, La., died at his home in that place, July 17, suddenly, from heart disease, aged 54.

Leonidas W. Faulkner, M.D. Cincinnati College of Medicine and Surgery, 1874; of St. Paris, Ohio, died at his home in that place, July 18, from paralysis, after an illness of one week, aged 57.

George Tyler Ballard, M.D. Berkshire Medical College, Pittsfield, Mass., 1862; a prominent physician of Hampden, Mass., died at his home in that village, July 18, after a long illness, aged 66.

Robert R. Thompson, M.D. Long Island College Hospital, Brooklyn, 1876; a member of the American Medical Association, died at his home in Kingston, July 9, from nephritis, aged 57.

Edward T. Bradley, M.D. University of Pennsylvania, Department of Medicine, Philadelphia, 1887; of Gallitzin, Pa., died at his home in that city, July 18, from tuberculosis, aged 42.

Samuel Bishop, M.D. St. Louis (Mo.) College of Homeopathic Physicians and Surgeons, 1870; of Bloomington, Ill., died at the home of his son in Muscatine, Iowa, July 20, aged 81.

William Farris, M.D. Medical Department, University of Nashville, 1858; of Tullahoma, Tenn., died at his home in that city, July 16, from paralysis, after a long illness, aged 74.

Campbell Crutchfield, M.D. Vanderbilt University, Medical Department, Nashville, 1888; of Gordonsville, Tenn., died at Nashville, July 17, following an operation for appendicitis.

Robert G. Laycock, M.D. Toronto University Medical Faculty, 1894; of Hopedale, Ill., died in the Brokaw Hospital, July 22, from pancreatitis and gallstones, aged about 55.

Book Notices

DISEASES OF CHILDREN, Medical and Surgical. By H. Ashby, M.D., F.R.C.P., Physician to the Manchester Children's Hospital, etc., and G. A. Wright, B.A., M.B., F.R.C.S., Surgeon to the Manchester Royal Infirmary, etc. Fifth edition, thoroughly revised. Cloth. Pp. 920. Price, $5.50 net. New York: Longmans, Green & Co., 1905.

It is doubtful if it is wise to combine in so small a space, as in this instance, a discussion of both the medical and surgical diseases of children. The accumulation of knowledge has become too great, and the differentiation of labor has gone too far, to do this satisfactorily. One branch or the other will almost surely suffer. The pediatric side of this work has been well done and is pretty complete; the surgical side is not so complete. The general arrangement of subjects is logical and the one usually followed: physiology and diseases of the newly born, then the grouping of diseases according to systems, digestive, respiratory, etc. The section on diphtheria, however, would be more complete if laryngeal involvement were more thoroughly discussed here, rather than in the chapter on respiratory diseases. The section on hemorrhages of the newly born is not in accord with prevailing opinion. There is too much of a tendency to dwell on hemorrhages from different localities as distinct affairs. These hemorrhages have been carefully studied and are now regarded as different manifestations of some common underlying cause and constitute the "Hemorrhagic Disease of the Newly Born." While the authors evidently have this condition in mind in writing under the term "hemorrhagic diathesis," they confuse it with "hemophilia neonatorum." The two conditions are entirely different. The "Hemorrhagic Disease of the Newly Born" is a non-hereditary disease, probably septic in its nature, self-limited in its course, never recurring. "Hemophilia" is a hereditary disease, non-septic, more frequent in later life and frequently recurring. This distinction should be borne in mind, as the ultimate outlook is so different in the two conditions. Surgical interference in meningeal hemorrhage incidental to hard labor holds out some prospect of relief, but of this we find no mention.

The value of any work on pediatrics depends chiefly on the quality and amount of work done on infant feeding. Most of what the authors say on this subject is good, as far as it goes. It does not, however, go far enough; there is too little detail, not enough elaboration as to preparation of food, methods of feeding, etc. The use of any of the proprietary foods should be condemned, and it is unfortunate to see a book of this kind recommending such an inaccurate, unscientific method of feeding. The chapter on scurvy is excellent, as one would expect from English authors, and the subject of rickets is also given the attention its importance demands. The infectious diseases are fully discussed, but a few comments as to diagnosis and to treatment are pertinent. Too little importance is attached to certain laboratory aids to diagnosis. Thus, in typhoid fever too much reliance is placed on the appearance of rose spots and an enlarged spleen, and too little emphasis laid on the leucopenia so constantly present even in the first days of the disease. Typhoid in early life is often a very atypical, irregular affair, and especially in the matter of rose spots and enlarged spleen does it depart from the adult type. These phenomena are so frequently absent that they can not be relied on in helping to a diagnosis. In many instances examination of the blood alone will reveal the true nature of the disease, and in this examination leucopenia is a very constant feature, often being present when the Widal reaction is absent. Again, in pertussis no mention is made of the lymphocytosis found in over 90 per cent. of the cases in the catarrhal stage, nor of the excess of lymphocytes found in the spinal fluid of tubercular meningitis, nor of the polymorphonuclear leucocytosis, and diminished chlorids in the urine, or lobar pneumonia. No mention is made of the varied bacteriology of meningitis. Speaking of the epidemic form, the authors say: "Weichselbaum has described a diplococcus, the *D. intracellularis*, which he believes to be the specific cause of epidemic cerebrospinal meningitis." This organism is now universally accepted as the cause of this form of meningitis, and the best opinion of the day warrants a stronger statement than the above. Certain phases of treatment are not sufficiently emphasized. The dosage of antitoxin in diphtheria is far too small, especially for laryngeal cases. The outdoor treatment of pneumonia and of tuberculosis should be more strongly emphasized.

We regret to see mention of "anemia infantum pseudoleukemica" (von Jaksch) as a distinct disease. This condition is merely a secondary anemia of severe degree arising from a variety of causes and should not be classed as a disease by itself. We had supposed the term "uricacidemia," with all that it implies, was an exploded theory. In view of later and reliable investigations it is unfortunate to continue the use of this term. There may have been an excuse for its appearance in the first editions, but not in this one. We also can not agree with the authors' statement that acute pyelitis is a rare disease in infants and children. In infants, at least, it is not infrequently found, when carefully looked for. The appendix contains suggestions as to baths, preparation of food, etc., some of which is of value, but the numerous "shotgun" prescriptions are to be deprecated, especially in a book on pediatrics in which treatment consists so largely of general hygiene and diet, and so little in drugs.

GOLDEN RULES OF PEDIATRICS. Aphorisms, Observations and Precepts on the Science and Art of Pediatrics, Giving Rules for Diagnosis and Prognosis, etc. By J. Zahorsky, A.B., M.D., St. Louis, editor of the St. Louis *Courier of Medicine*. Cloth. Pp., 362. Price, $3.00 net. Published by the C. V. Mosby Medical Book Co., 1906.

The title of this book in a measure prepares one for what one finds on opening it. It is a compilation of trite sayings and instructions as to what to look for in the examination of children, with superficial suggestions as to what to do when one has found these things. In laying down these "golden rules," we are told to look out for or to remember only symptoms, and this without any system or logical arrangement. A chapter or section entitled "Peritoneal Irritation" may be taken as a sample of the book. Under this section are found mentioned abdominal tenderness and rigidity, with their causes, severe anemia with mention of pernicious anemia, leukemia, scurvy, anemia infantum pseudoleukemia and edema. Pernicious anemia, by the way, is spoken of as not "uncommon in young children," whereas it is a rare condition at this age.

A section is devoted to "Some Golden Rules of Prognosis." Here we read that epilepsy is not serious, but prone to leave dangerous consequences. We read also that "a few diseases usually amenable to treatment may exceptionally assume a malignant form for which all therapeutic effort is futile," and among these disease the author puts cerebrospinal fever! As the mortality in the meningococcic variety of this disease is about 60 per cent., and even higher in the pneumococcic type, and as those surviving are too often left terribly handicapped for life by some serious defect, either of some special sense or of the mentality as a whole, the view that it is "usually amenable to treatment" seems hardly warranted. In another part

of the book, however, the author does state that the mortality in this disease is high.

The important subject of infant feeding is touched on briefly and superficially. The percentage method of feeding is advocated, but in an indefinite and unsatisfactory manner. Proprietary foods are advised under certain conditions, contrary to the best teaching of the day. The complex character of milk is not realized and there is no attempt made to differentiate between fat indigestion, proteid indigestion and sugar indigestion, the essential principles in infant feeding. It is difficult to see what good purpose this book can serve. The practicing physician will find in it little or nothing suggestive. It is no book to put into the hands of the medical student, as it would tend to develop in him superficial habits of thought and study.

FOODS AND THEIR ADULTERATION. Origin, Manufacture and Composition of Food Products; Description of Common Adulterations, Food Standards and National Food Laws and Regulations. By Harvey W. Wiley, M.D., Ph.D. Illustrated. Cloth. Pp. 625. Price $4.00 net. Philadelphia: P. Blakiston's Son & Co., 1907.

The importance of a knowledge of foods and their adulteration will be readily acknowledged, and it will be as freely granted that there is no one better fitted by training and position to treat such a subject than Dr. Wiley. The book is not a technical treatise. While the author expresses the hope that the book may prove serviceable to the chemist and expert in food inspection, it is prepared primarily for the consumer. The method of treatment includes an account of the sources, methods of manufacture, and the commercial forms under which food is placed on the market, with directions for judging as to its quality and an account of conditions which may render it unfit for food. The adulterations are described and while analytic methods are not given in detail, simple tests for adulterations are described and some estimate of the value of the various methods of detecting them are given. The commercial value and relative economy of various foods is touched on and the hint given in certain cases, e. g., in dealing with cereal foods, that the consumer might profit financially without detriment to his health by preparing his own food from the raw material. An appendix gives the standards of purity adopted by the United States Department of Agriculture, and the regulations governing food inspection and the administration of the Food and Drugs Act. Tea, coffee and alcoholic liquors have not been included in the scope of the work. Numerous illustrations are provided, several of them being colored plates.

PRACTICAL PHYSIOLOGICAL CHEMISTRY, A Book Designed for Use in Courses in Practical Physiological Chemistry in Schools of Medicine and Science. By Philip B. Hawk, M.S., Ph.D., Demonstrator of Physiological Chemistry in the Department of Medicine of the University of Pennsylvania. With Color Plates and Other Illustrations. Cloth. Pp. 416. Price, $4.00. Philadelphia: P. Blakiston's Son & Co., 1907.

This book, which is something more than the ordinary laboratory manual, and something less than a thorough treatise on physiologic chemistry, will undoubtedly be found useful for medical schools. Besides giving the usual directions for a systematic course in the chemistry of those substances of importance in physiologic processes, many of the laboratory features of the more recent advances in biochemistry are discussed at greater length than is usual in works of this kind. Excellent illustrations of the chief products of proteid hydrolysis are given, which will be found valuable to research workers as well as to students; indeed, the illustrations throughout the book are of exceptional merit. Other commendable features are the large amount of consideration of methods of making tests and the formulæ for the preparation of reagents; and the abundant use of structural formulæ in discussing both biochemical substances and their reactions. The explicit directions for quantitative urinary analysis, particularly the valuable new methods of Folin, will be found useful. All these features make the book valuable not only for undergraduate courses, but also as a handbook for the clinical and research laboratory. The chief criticism to be made is the failure to give references by which the original descriptions of the newer methods can be found by those wor ers who wish to consult a more complete discussion than can be given in a text-book. Such references need not be so numerous, if carefully selected, as to increase appreciably the bulk of the book and they add greatly to its usefulness for many purposes.

VEST POCKET ABSTRACT SERIES. Including Abstracts on Anatomy, Physiology, Chemistry, etc. By Drs. McCurdy, Charles A. Orr and Others. Flexible Leather. Pp. about 140 each. Price, $1.00 each. Pittsburg: Medical Abstract Co., 1907.

Our examination of the books of this series does not leave an impression that they are destined to fill a place of great utility in medical education. The extreme condensation is very unfavorable to satisfactory work and great allowances must be made for the limitations under which the authors have labored. A brief examination, however, reveals numerous errors of statement due, possibly, to careless revision that tend to make the books not only worthless, but positively misleading. We may cite the book on chemistry, for example. Under chlorin we have the incorrect formula HClCO given in an equation; under nitrogen we have the statement that nitrous acid is formed by reducing potassium nitrate with a lead salt. Probably the author means to form a nitrite by reducing the nitrate with metallic lead, but how is the student to know? Bromin is said to be prepared by heating any bromid with sulphuric acid and an equation is given which yields hydrobromic acid but not bromin. We are told that chlorin is found in the alkaline earths. These and similar errors are fatal to the usefulness of the series. If accuracy is anywhere of importance it is in works intended for those who have at hand no means of verifying the accuracy of the statements they read.

SECOND REPORT OF THE WELLCOME RESEARCH LABORATORIES at the Gordon Memorial College, Khartoum, Africa. Andrew Balfour, M.D., B.Sc., etc., Medical Officer of Health, Khartoum, Director. Cloth. Pp. 254. Department of Education, Soudan Government: Khartoum, 1906.

The second report of the Wellcome Research Laboratories at the Gordon Memorial College, Khartoum, affords a substantial addition to the literature of tropical medicine, and a striking evidence of the broad field of research that is opened by the occupation of Africa by the white race. The report forms a book of 250 pages, including the report of mosquito work and an account of other blood-sucking insects in the Soudan, a report on economic entomology, an account of trypanosomiasis in the Anglo-Egyptian Soudan, the report of the traveling pathologist on miscellaneous matters and the chemist's report. The interest for the physician centers in the researches on blood-sucking insects and trypanosomes. The presence of glossina palpalis in the Soudan appears to be established so that there is danger of the spread of trypanosomiasis and the sleeping sickness to the northwest. The trypanosomiasis of cattle and mules is described and some experimental work done on monkeys recorded. Human trypanosomiasis appears to be so far unknown or very rare in this region.

MANUALE PRATICO DELL' IGIENISTA. Per uso degli ufficiali sanitari, degli aspiranti ad uffici nella amministrazione sanitaria dello stato e dei comuni, degli allievi dei corsi complementari di igiene e degli studenti di medicina, farmacia e veterinaria. By C. Tonzig and G. Q. Ruata, con Prefazione del Prof. A. Serafini. Con. 243 Incisioni. Cloth. Pp. 64. Milan: Ulrico Hoepli, 1907.

To those who read Italian this little work will be found a handy reference book for many matters of hygiene. It is fully illustrated, especially as regards apparatus; the descriptions are clear and in the main it is well up to date. As an exception in this respect we may notice the space given to Sanarelli's bacillus, while the researches and facts as to the real cause of the disease are passed over in three or four short paragraphs, and the practically settled question is treated as one that is still an open one.

ESSENTIALS OF HISTOLOGY. Descriptive and Practical. For the Use of Students. By E. A. Schäfer, Sc.D., F.R.S., Professor of Physiology in the University of Edinburgh. Seventh Edition. Cloth. Pp. 507. Price, $3.50 net. Philadelphia and New York: Lea Bros. & Co., 1907.

It is a sufficient commentary on this work to direct attention to the fact that it is now in its seventh edition. The size of the book is convenient, the text is clear and concise, and is elucidated by many valuable illustrations, some of which are in colors. The book is divided into 50 lessons, each of which is intended to occupy from one to three hours, so that the teaching of histology is facilitated considerably. The work partakes more of the nature of a good laboratory guide than a class text-book, although it is well suited for either.

Medical Education and State Boards of Registration

CALIFORNIA Board of Medical Examiners, San Francisco, August 6. Associate Secretary, Dr. F. Dudley Tait, San Francisco.

NEBRASKA State Board of Health, State House, Lincoln, August 7-8. Secretary, Dr. Geo. H. Brash, Beatrice.

Indiana Examination in Two Parts.—At a meeting of the Indiana State Board of Medical Examiners held July 9, 1907, a resolution was adopted that hereafter students completing the work of the freshman and sophomore years of a reputable medical college may take the examination in anatomy, including histology and embryology, physiology, chemistry, pathology, bacteriology and such other required subjects as are taught in the freshman and sophomore years of a reputable medical college, at the end of the sophomore year. The student applying for such examination must present credentials signed by the dean of the college from which he comes, showing that he has completed the work of the medical freshman and sophomore years. He must pay a fee of $25 for this examination, which will not excuse the student from paying the regular fee when he comes up for his final examination. The board will keep a record of the grades and add them to the grades obtained at the final examination for certificate to practice medicine. There will be no reciprocity with other states in like examinations or grades.

Arkansas April Report.—Dr. F. T. Murphy, secretary of the State Board of the Arkansas Medical Society, reports the written examination held at Little Rock, April 9, 1907. The number of subjects examined in was 7; total number of questions asked, 58; percentage required to pass, 75. The total number of candidates examined was 64, of whom 23 passed, including 16 non-graduates, and 41 failed, including 30 non-graduates. The college for one candidate who failed was not obtained. Ten old practitioners, including two non-graduates, were granted license by reason of having been registered under old law. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Medical Coll. of Alabama	(1887)	77.
George Washington University	(1904)	93
Rush Med. Coll.	(1906)	86
University of Louisville	(1905)	75
St. Louis University	(1906)	78
Vanderbilt University	(1894)	75
University of Nashville	(1907)	78
FAILED.		
Mississippi Med. Coll.	(1907)	73
Jefferson Med. Coll.	(1877)	73
Meharry Med. Coll. (1905) 54; (1906) 60; (1907) 54, 73, 73;	(*)	53
Univ. of West Tennessee	(1906)	20
University of Tennessee	(1906)	44
REGISTERED UNDER OLD LAW.		
Barnes Med. Coll.	(1901)	
New York University Med. Coll.	(1894)	
Memphis Hosp. Med. Coll.	(1893), (1896), (1899)	
University of Tennessee	(1872)	
St. Bartholomew's College, London, England	(1892)	
†Hannibal Med. Coll., Memphis	(1892)	

*Year of graduation not given. †A fraudulent institution.

Idaho April Report.—Dr. W. F. Howard, secretary of the Idaho State Board of Medical Examiners, reports the written examination held at Boise, April 2-4, 1907. The number of subjects examined in was 14; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 21, of whom 16 passed and 5 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Colorado School of Medicine	(1906)	76
Northwestern Univ. Med. School	(1905) 84, 86; (1906)	92.5
Keokuk Medical College	(1905)	78.2
Rush Medical College	(1902)	89
Michigan Coll. of Med. and Surg.	(1894)	79.5
University of Minnesota	(1900)	81
Barnes Med. College, St. Louis	(1906)	83.5
Missouri Medical College, St. Louis	(1899)	77
St. Louis College of P. and S.	(1895)	89
Marion-Sims-Beaumont Medical College	(1904)	76
Medical College of Ohio	(1893)	81.5
Medico-Chirurgical College, Philadelphia	(1902)	83.5
Trinity Medical College, Ontario	(1899)	75.5
University of Toronto	(1905)	87
FAILED.		
Hahnemann Med. College, Chicago	(1892)	73.1
Kansas City Homeopathic Medical College	(1903)	69
St. Louis University	(1906)	57
Omaha Medical College	(1901)	67.5
University College of Medicine, Richmond, Va.	(1904)	70.7

Wyoming June Report.—Dr. S. B. Miller, secretary of the Wyoming Board of Medical Examiners, reports the written examination held at Cheyenne, June 19-21, 1907. The number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 4, of whom 1 passed and 3 failed. Seven reciprocal licenses were granted. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Denver and Gross Coll. of Med.	(1907)	79.7
FAILED.		
Rush Med. Coll.	(1896)	71.1
Beaumont Hosp. Med. Coll.	(1893)	67.2
Homeo. Hosp. Coll., Cleveland*	(1881)	73.1

REGISTERED THROUGH RECIPROCITY.	Year Grad.	Reciprocity with
Hahnemann Med. Coll., Chicago	(1903)	Illinois
American Coll. of Med. and Surg., Chicago	(1905)	Illinois
Rush Med. Coll.	(1898)	Indiana
Keokuk Med. Coll., Coll. of P. & S.	(1906)	Iowa
University of Maryland	(1902)	S. Carolina
University Med. Coll., Kansas City	(1905) (1906)	Missouri

* Merged with Cleveland Homeo. Med. Coll. in 1898.

Arizona July Report.—Dr. Ancil Martin, secretary of the Board of Medical Examiners for the Territory of Arizona, reports the written examination held at Phœnix, July 1-2, 1907. The number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 5, all of whom passed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Rush Med. Coll.	(1906)	79.7
College of P. and S., Baltimore	(1897)	81
Jefferson Med. Coll.	(1887)	75
Southwestern Univ. Med. Coll., Dallas	(1907)	75
Medical Coll. of Virginia	(1901)	75

North Dakota July Report.—Dr. H. M. Wheeler, secretary of the North Dakota State Board of Medical Examiners, reports the written examination held at Grand Forks, July 2-4, 1907. The number of subjects examined in was 14; percentage required to pass, 75. The total number of candidates examined was 16, all of whom passed, Six reciprocal licenses were granted. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Bennett Coll. of Ecl. Med. & Surg.	(1907)	76
College of P. and S., Chicago	(1900)	81
Univ. of Minnesota	(1903) 79; (1906) 76, 84, 84; (1907)	78, 83
Minn. Coll. of P. and S.	(1905) 82; (1906) 81; (1907)	79
University of Nebraska	(1907)	80, 84
Albany Med. Coll.	(1900)	85
Milwaukee Med. Coll.	(1907)	81
Manitoba Med. Coll.	(1907)	91

REGISTERED THROUGH RECIPROCITY.	Year Grad.	Reciprocity with.
Rush Med. Coll.	(1904) Illinois; (1905)	Wisconsin
Keokuk Med. Coll.	(1905)	Iowa
Detroit Coll. of Med.	(2, 1906) (1907)	Michigan

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, CONTRACT PRACTICE, INSURANCE FEES, MEDICAL LEGISLATION, ETC.

A Good Year's Work.

The July number of the *Journal of the Michigan State Medical Society*, just received, contains the official proceedings of the last meeting of the state society, a report of this meeting appearing in THE JOURNAL, July 6, but only a brief account was given of the proceedings of the House of Delegates. It would, however, be difficult to find a better illustration of the increased activity and enlarged field of present-day medical organizations than the report of this meeting, and we, therefore, give more space than we could otherwise afford. The reports of the council and of the various officers and committees, as well as the proceedings of the House of Delegates, all testify plainly to the earnestness and energy of the members of the association.

ADVERTISING.

The Council recommended the adoption of the following rules regarding advertising in the state journal:

Advertisements of remedies expressly disapproved by the Council of Pharmacy shall not be admitted.

The *Journal* does not stand sponsor for advertisements in its pages or necessarily approve of those published.

Reading notices of advertisements shall not be admitted after contracts in existence have expired.

REVIVAL IN MEDICAL ACTIVITIES.

The Council reported that the past year had seen a medical revival in Michigan, the work of the county societies being carried on with an energy not before in evidence, and that new lines of work were being developed in many of the more progressive county societies. Postgraduate courses have been established in six counties. The report says: "Organization has brought about a new era in medical matters and the profession is receiving the benefit on the intellectual as well as the material side." The report showed the present membership of the society to be 2,011. The material compiled for the American Medical Directory was utilized in compiling a chart showing the number of physicians in each county and councilor district and the percentage of members.

The Council recommended the election of the president one year in advance, following the plan of the American Medical Association. The Committee on Legislation reported on various bills, having a medical aspect, that were introduced into the legislature during the past session.

MEDICAL LEGISLATION MUST BE APPROVED.

Dr. J. W. Inches, of St. Clair, presented an amendment to the by-laws, making it necessary for proposed legislation to be approved by the Council or the House of Delegates of the state association before being introduced into the state legislature or sent to any member thereof in the name of the society. This amendment was adopted; also an amendment creating a committee on medical education of three members, one of whom should be sent each year as a delegate to the Conference on Medical Education of the American Medical Association.

EXAMINATION OF SCHOOL CHILDREN.

A most excellent report was presented from the committee appointed to encourage the systematic examination of the eyes and ears of school children. The State Board of Health as well as the State Board of Education have adopted resolutions favoring legislation for this purpose. The report showed that, up to date, the work had been inaugurated in Detroit, Grand Rapids, Bay City, Saginaw, Pontiac, Kalamazoo and Ann Arbor.

REPORT ON TUBERCULOSIS.

The Committee on Tuberculosis reported that one of the most successful tuberculosis exhibits ever given in the state had been held at Manistee, the meeting lasting ten days and over three thousand people being reached directly and five thousand more through the newspapers. Following the meeting, the city health officer in Manistee succeeded in securing provisions for compulsory disinfection of all houses vacated by renters. Sanitaria have been established in a number of counties, particularly in the northern part of the state, where conditions are specially favorable. Lectures have been given throughout the state, both to the general public and at farmers' institutes, taking up tuberculosis in cattle as well as in man, purity of milk supply, etc. In Grand Rapids two thousand dollars have been subscribed by the public to care for the tuberculous indigent poor. In Detroit an antituberculosis society has been organized and an outdoor sanitarium established, in connection with the Wayne County poorhouse, by Dr. E. L. Shurly. Investigation of the condition of the state penitentiaries with regard to the propagation of tuberculosis has also been taken up.

CONTRACT PRACTICE.

Space does not permit of the reproduction or even of the abstracting of many of the excellent reports presented. The report of the Committee on Contract Practice, however, is of particular importance, as it is one of the most exhausting and comprehensive reports on this vexing question which has yet been presented. We accordingly give it in full for the benefit of other societies and committees which may be at work on this question.

In accordance with a resolution adopted by the House of Delegates last year a special committee was appointed to investigate and report on conditions in this state relative to this problem.

It is not understood by your committee that it was at all intended as a part of its function to suggest or to recommend ways and means of solving the problem, but simply to gather information as to its character and extent.

Your committee finds the following classes of contract practice carried on by physicians in this state, viz.:

1. Railroad contracts.
2. Mining contracts.
3. Contracts for the performance of services for the indigent of counties and cities.
4. Contracts with local industries.
5. Contracts with sick and accident indemnity companies.
6. Contracts with fraternal organizations.

First.—As to railroad companies. Your committee finds that every railroad of any importance in the state has an agreement or contract with a surgeon in the cities and towns along its lines providing for the rendering of surgical assistance to persons injured in the company's service or while traveling on its lines.

The compensation consists in most cases of an annual pass over the company's lines, or the payment for actual services rendered in the care of the injured. In very few cases does your committee find complaint that the compensation is inadequate, or that the rights of other local practitioners are infringed on.

Second.—The care of the employés of mining corporations by contract surgeons is practically the universal rule. In some cases large hospital systems are established, employing salaried chief surgeons and large staffs of assistants. The compensation for this service is provided for by deducting a part of the weekly or monthly wage of the employé. This amount is 50c to $1.00 per month for a single man and $1.00 to $2.00 per month for a man of family.

Reports indicate that in some places the employés are dissatisfied with the service rendered and in some instances employ other than the contract service. Your committee has not learned whether or not the medical profession in mining localities is or is not satisfied with the system. Your committee believes the mining contract system a problem demanding further investigation by the physicians resident in the localities where it is practiced.

Third.—The investigation and report on contract work done for the indigent of counties and cities was assigned to Dr. Seeley of Mayville, Tuscola County, who will render a special report after the disposition of this report.

Fourth.—From reports received as to the system of contract service for employés of factories or other local industries we will report the following:

At Benton Harbor, the Baker-Vater Co., employing 300 men, pays the regular local fee bill for care of its injured employés.

At Saginaw, the Plate Glass Factory, employing 75 men or more, has its employés cared for medically and surgically for a fee to its physician of $1.00 per month for family and 50 cents per month for a single man.

At Wyandotte, the Michigan Alkali Company, employing 1,350 men, charges its employés 50 cents per month and furnishes contract medical service; also at Wyandotte the American Shipbuilding Company, employing 750 men, collects from the men 10 cents per week for a like service.

At Menominee, the Electrical and Mechanical Company, employing 300 men, furnishes medical and surgical service at a cost to the employé of 15 cents per month.

Certain large insurance companies having employers' liability departments contract on the one hand with the factories and on the other with the physicians, bringing about the result that one physician or more, for a set compensation, will do the surgical work for several industrial plants. For example, in Detroit, the Standard Life and Accident Company has liability contracts with several large factories and industries where the injury hazard to employés is great; by paying to two Detroit physicians a set salary, the amount of which this committee could not learn, they provide not only for first surgical aid to the injured employé, but also for his subsequent care and dressings.

It is the opinion of many Detroit physicians, who have some idea of the amount of services rendered, that the total salary received falls far short of proper compensation in accordance with the fees received in regular practice for like services.

The Standard has similar arrangements at Bay City and Lansing, as well as at Muskegon.

In this class of contract practice is placed that of the Aetna Life and Accident Co., doing a similar business to that of the Standard for large factories in Detroit, Muskegon and Battle Creek. The compensation for the medical and surgical work for this company is a percentage (usually 10 per cent.) of an assessment (usually $1.00 per month) levied on the employés.

It seems to your committee that not all phases of the contract system as operating between the physician and local industries or employers' liability companies are objectionable. Certainly here, as also in the railroad contract problem, the company must be conceded the right to secure for the injured employé proper and sufficient surgical service in order to protect itself from unjust liability claims.

On the other hand, any operation of the system tending in any way to degrade and cheapen the practice of our profession or tending to establish in our practice any other standard of competition than that of true professional worth and genuine efficiency as a practitioner of medicine and surgery should be considered as reprehensible.

Fifth and Sixth.—The operations of the remaining two classes of contract practice, i. e., of the Sick and Accident Indemnity Companies, and of the Fraternal Orders, can better be considered together.

The data given are compiled from reports sent in from cities of 5,000 and over. The absolute accuracy may in some instances be a matter of doubt, but the statements are in every case so close to the truth that a just conclusion may be drawn from them.

Data on all the organizations of this character can not be included in the report, but on the larger and more active ones only.

1. The National Casualty Company of Detroit is reported as em-

ploying a contract physician in Detroit for an approximate membership of 1,500. A statement as to the physician's compensation could not be obtained.

This company in Grand Rapids provides service for a membership of 100 and pays its physician 25 cents per week for each member.

II. The Phoenix Preferred Accident Co., of Detroit, is reported to employ for a usual fee of 10 per cent. of the premium collected a contract physician at Battle Creek for 250 members; at Jackson for 200 members; at Detroit for 700 members, and at Lansing for 200 members.

III. The United States Health and Accident Co., of Saginaw, has a physician at Battle Creek caring for a membership of 245, and at Owosso for 200; the compensation as reported varies from $1.50 to $3.00 per year per member.

IV. The Continental Casualty Co., of Hammond, Ind., maintains a sanitarium at Detroit with two resident physicians and one visiting surgeon. At Bay City a physician is employed at $50 per month; the number cared for at that city is not reported. At Lansing there is a membership of 500, but no report was received as to contract physician's fee. This company at Jackson has a membership of 1,400, and pays a local physician $125 a year to care for all members reporting at his office. Care and treatment are furnished free at the company's sanitarium at Detroit, if desired.

V. The Grand Rapids Accident and Health Insurance Company, now combined with the Imperial Casualty Co., of Detroit, furnishes free medical service to a membership of 200 at Jackson, 250 at Grand Rapids, and 300 at Lansing, and pays the physician from $1.00 per year in some cities to 25 cents per month in one other for each member.

VI The United States Accident Association, of Detroit, has a contract physician at Detroit, membership not given; at Grand Rapids, membership 150; at Muskegon, membership 200; compensation reported at about 10 per cent. of premiums received.

For membership in organizations of this class the premium collected from each member is usually $1.00 per month. It is seen, then, that the physician's income from this class of practice is usually from $1.00 to $1.20 per year for each individual.

VII. A fraternal order known as the Foresters of America, in each locality where established, employs a lodge physician as part of its plan of organization. He is paid from 80 cents to $1.50 a year per member. They are reported as having a membership as follows:

Battle Creek	150	Bay City	600
Marine City	150	Lansing	400
Pontiac	1,400	Menominee	35
Traverse City	500		

VIII. The Fraternal Order of Eagles provides in its constitution for the employment of an Aerie physician in each of its subordinate lodges.

The Fraternal Order of Eagles, as reported from a reliable source, has an approximate membership in Michigan of 5,000. A subordinate lodge has been established in nearly every city sending in a report to this committee.

Lansing and Bay City report a membership of 500 each, Jackson, Owosso, Pontiac, Iron Mountain and Benton Harbor report memberships of from 200 to 300. Grand Rapids, Detroit and Kalamazoo furnish no report on the membership. Some of the smaller cities report memberships varying from 50 to 200. A very few subordinate lodges have changed the provisions of the constitution so that the Aerie physician receives a different compensation than that specified. Notably in Albion, where, although an Aerie physician is appointed, it is provided that he receive compensation according to the fees prevailing among the practitioners of that city.

To show how contract services for lodges and for sick and accident companies may play an important part in the ethical and economical conditions affecting the profession in a community, the committee would report the conditions in the cities of Battle Creek and Jackson:

BATTLE CREEK.

Organization.	Membership.
Phoenix	250
U. S. Health & Accident	245
Eagles	130
Foresters of America	150
Total	775

Estimating each member to represent a family of three, there are directly under the influence of this form of contract practice 2,325 of Battle Creek's population of about 30,000.

JACKSON.

Organization.	Membership.
Phoenix	200
Continental Casualty	1,400
Grand Rapids Accident and Health	200
Workingmen's Mutual Protective Assn.	300
Home Accident and Health	15
Eagles	300
German Workingmen's Relief Societies	263
Total	2,678

Estimating as before, there are directly under the influence of this form of practice 8,034 of the 30,000 population of Jackson.

In conclusion, your committee would call attention to certain facts brought out by correspondents in their reports to the committee:

1st.—That not *all* forms of contract practice should be subject to condemnation; as, for example, contract practice as carried on for certain mining corporations. From the facts obtained on this subject your committee would not feel competent to devise a system better adapted to meet conditions in mining localities.

2nd.—In some communities men of unquestionable moral integrity and high standing in the profession have been, and a few seem to be yet, engaged in forms of contract practice which seem to the committee objectionable.

3rd.—In most instances local societies are totally unable to control the evil without serious danger of disruption, although a few counties, notably Marquette, Mason and Emmet, have succeeded in holding the practice in check.

It is the judgment of the committee that the State Society should take some action looking to a betterment of conditions as affecting the matter under consideration.

T. S. LANGFORD,
A. S. KIMBALL,
H. B. GARNER,
E. H. FLYNN,
T. E. DE GURSE,
Committee.

REPORT OF SUBCOMMITTEE.

The Committee on Contract Practice appointed me as a special committee to investigate and report on that phase of our work that has to do with the contract practice for the County Board of Poor Commissioners.

That this part of our work has been, and is at the present time, in a very unsatisfactory condition, is evidenced by the numerous suits between the supervisors and doctors in adjusting claims for services rendered the indigent poor, by the constant discussion of this subject by the county societies, and by the motion that was carried at our last state meeting asking that this part of our work be investigated.

The questions that have been asked are:

Are the indigent poor looked after satisfactorily in your county? Is the schedule of prices, as allowed by the Board of Supervisors, satisfactory? If you have the contract system, does it give the indigent poor first-class treatment, and is the price paid what it should be?

We received reports from forty-two counties, and, with three exceptions, the reports indicated a very unsatisfactory condition. The exceptions were in the counties where as yet they were free from contracts, and the physicians were paid the regular fees for the services rendered, and the patients allowed to make their own choice of physicians.

Up to a few years ago, this was the plan throughout the state, and was satisfactory except when the supervisors, in auditing the bills, felt disposed to cut them in two, and this was quite often the case. A great many supervisors seem to think that they are better judges of what the doctors should have for their services than the doctors themselves. In many of the counties the supervisors adopted a schedule of prices, without consulting the physicians, far below the cost of the work. For instance, in Oakland County, a doctor drives fifteen miles and gets $2.40. In many of the counties the doctors made a remonstrance at this unfair treatment, and many of them refused to do work for the poor boards, or, if they did take care of an indigent patient, did not put in a bill for it.

Report has been received from thirty-nine counties where the poor commissioners canvassed the doctors in the different townships and let the work to the lowest bidder. The prices paid range from $15 to $150 per year. The doctors in some of the townships contract to do all of the indigent work, furnish medicine, including antitoxin, take care of all smallpox cases, and examine insane indigents. We have been able to interview many of the physicians who have these contracts, and a few of them think they get pay enough for the services rendered, but the majority consider the prices paid far below what they should be. Also, the other physicians in the county who did not have the indigent contracts were doing about the same charity work as usual, for which, of course, they received nothing.

In some counties the competitive bidding for the work at the county houses has been quite sharp; for instance, in Midland County the work last year was contracted for at $75. A few years ago the county paid $500 for this work.

In summing up, as was said before, we find nearly every one concerned dissatisfied with the present conditions, and they are united in saying that they would welcome any fair schedule or scheme that would tend toward respectable fees, better care of the poor, and self-respect.

It seems to me that the time has come when we should say to the supervisors of Michigan that the physicians of this state propose to have something to say about how the dependent poor shall be treated, and also something to say about what their own services are worth.

That a reform is needed in many counties in the manner in which the sick at the county houses are cared for is known to many of us. Who but the physicians are able to take up this work and carry it to a successful issue?

It was suggested by Dr. Angus McLean, in a paper read before the State Society at Port Huron, that each county should have a small, well-equipped hospital. That this is within our reach we firmly believe if the following scheme is carried out:

One of the members of the board of poor commissioners should be a physician who is a member of the county society and approved by the society. Each county society should become an incorporated body. Then it is in a position to say to the board of supervisors, and here we will quote from the statistics of Tuscola County, whose population is 36,000, whose largest city contains only 2,000: "You paid for the medical attendance rendered the indigent poor of the county during the last five years $25,000, or an average of $5,000 per year. You pay to our society $5,000 a year, and each member of the society contracts to take care of all the indigent work that comes to him with a proper order from the supervisor." The society would soon have a respectable sum with which it could build and equip an operating room at the county house. We could then take down the sign of "county house" and put up the sign "county hospital." The work at the hospital could be looked after by a staff of physicians from the nearest town, who, by dividing the work, or by taking it in rotation, as is done in the larger hospitals, could do it with small inconvenience. Then by establishing an ambulance service we could have hospital facilities at the door of the country practitioner, and, instead of the sick being transferred in many cases hundreds of miles to reach the specialist, the specialist could come to the patient.

The idea of establishing a hospital in connection with the county house would, of course, not appeal to the profession in counties where they have already sufficient hospital facilities, but in such counties the fund could be devoted to other objects which benefit the profession as a whole. The details of this scheme could, no doubt, be worked out satisfactorily by the county societies.

In our opinion, then, we should agree that no contract practice should be entered into by an individual without the contract having

the approval of the county society, and that the contract for the county work be taken by the county society as a whole, except it be in the larger cities where the county physician or city physician is supposed to devote his whole time to such work.

It can be readily seen, if this idea can be carried into effect, we would have no trouble in getting every reputable physician in the state into our society. It would eliminate what is now a very serious menace to us, and tend to promote strength and harmony. It would place us before the people as public benefactors rather than as so many dollar chasers, and, above all, we would maintain self-respect.

A. L. SEELEY.

Medicolegal

Insanity Etymologically, Lexically and Legally—Expert Testimony.

The Supreme Judicial Court of Maine says, in re American Board of Commissioners for Foreign Missions, that the statute of that state provides that "a person of sound mind, and of the age of 21 years, may dispose of his real and personal estate by will, in writing, signed by him, or by some person for him at his request, and in his presence, and subscribed in his presence by three credible attesting witnesses, not beneficially interested under said will." There is no exception or qualification to the requirement that a person must be of sound mind in order to make a valid will, and the burden rests on the proponent of the will to prove affirmatively that the testator was of sound mind when he made the will. Hence, in probating a will, the sanity of the testator must be proved. It is not to be presumed.

But the word "sanity" is used in its legal, and not its medical sense. Etymologically, insanity signifies unsoundness. Lexically it signifies unsoundness of mind, or derangement of the intellect. In law, every mind is sound that can reason and will intelligently, in the particular transaction being considered; and every mind is unsound or insane that can not so reason and will. The law investigates no further. This definition clearly differentiates the sound from the unsound mind, in the legal sense.

A disposing mind involves the exercise of so much mind and memory as would enable a person to transact common and simple kinds of business with that intelligence which belongs to the weakest class of sound minds; and a disposing memory exists when one can recall the general nature, condition and extent of his property and his relation to those to whom he gives, and also to those from whom he excludes, his bounty. But mere intellectual feebleness must be distinguished from unsoundness of mind. The requirements of a "sound and disposing mind" do not imply that the powers of the mind may not have been weakened or impaired by old age or bodily disease.

It is a well-established rule in the state of Maine that, while confinement in an insane asylum or the disability of guardianship is made prima facie evidence of some mental incapacity, yet it is a rebuttable presumption of fact and may be overthrown by a preponderance of the evidence. The incapacity of guardianship is simply a fact, which may be proven like any other fact tending to establish mental incapacity; but it does not work an estoppel on the proponent of a will. The statute recognizes this principle and provides, among other things, that, "when a person over 21 years of age is under guardianship, he is incapable of disposing of his property otherwise than by his last will."

If the guardianship was imposed on account of the impairment of some particular function of the brain which did not materially interfere with the judgment, comprehension and memory, it might require scarcely any evidence at all to remove the effect of it. On the other hand, if it was imposed on account of long standing and chronic insanity, involving the destruction of all these faculties, no amount of evidence could overcome it.

Of the impairment of the mind between these two extremes, the amount of evidence required to overcome the disability would depend on the facts and circumstances of each particular case; so that, when the court reaches the final determination as to mental capacity or incapacity, whether the person is in an insane asylum, under guardianship, or under no legal disability, the court reverts to the simple proposition of law whether under all the circumstances in the particular case under consideration, the testator was of sound and disposing mind. The proof must be sufficient to overcome all disabilities, however originiating and however imposed. When the proponents have sustained the burden of proof on this proposition, it matters not how the obstacles to be overcome were created.

The last of the handwriting of the party who made the will in this case showed an unsteady hand and an imperfect sight. Letters were repeated and the lines were crooked. But the court says that it would hesitate to say that this defect in the chirography of the testator was evidence of any greater decay than that which may be attributed, in many instances, to the weakness incident to approaching old age. It needs no expert to inform us that the hand may tremble and the sight may fail long before the mind is deprived of its mental grasp. These evidences of mental incapacity, therefore, must be considered in each particular case in connection with the other testimony. The other testimony may show that these defects are due solely to mental decline. It may show that they are due to other causes.

In the consideration of the testimony of medical experts, the test of consistency and reasonableness, always having reference to the other testimony in the case, which their opinions may tend to corroborate or contradict, should be applied.

The opinion of a medical expert, whose testimony does not differentiate between a medically sound mind and a legally sound mind, is entitled to weight only when the other evidence shows that it applies to legal unsoundness, as a mind legally sound may be medically unsound. On the other hand, a medically sound mind necessarily includes a legally sound mind.

When it appears that the opinion of a medical expert is made up from a prejudiced view and for a predetermined purpose, then the ordinary rule of law with reference to the effect of interest on credibility should be applied with special force, as such opinion evidence presents an unsafe criterion on which to found a judgment affecting important interests. Such testimony is not only worthless, but insidious and dangerous; for it is impossible for the layman, in the analysis of such testimony, to distinguish the true from the untrue; and, if the untrue is acted on, injustice must follow.

Liability of Railroad as Carrier to Pesthouse.

The Supreme Court of Appeals of West Virginia holds, in the case of Jenkins vs. Chesapeake & Ohio Railway Company, that where, by a contract made between a county court and a railroad company for the mutual advantage of the parties thereto in preventing the spread of a contagious disease, the carrier agrees, in consideration that the county court shall provide and maintain a pesthouse for the care and treatment of persons infected with such disease, to furnish and properly equip a car therefor, and transport such persons to the pesthouse, one of the class of persons therein designated in whose interest it is made may maintain in his own name an action against such carrier, either for damages resulting from a breach of its duty to him under the contract, or arising out of the relation of carrier and passenger after he has been accepted as a passenger.

Framing and Objecting to Hypothetical Questions.

The Supreme Court of Minnesota says, in the personal injury case of Frigstad vs. Great Northern Railway Company, that a hypothetical question must include all facts relevant to the issue which the evidence at the time the question is asked tends to prove. It must not assume facts as to which there is no evidence.

Under ordinary circumstances the objection that a question as stated does not include all the essential facts, or is not a correct statement of the evidence, should be treated as specific and as pointing out the grounds of the objection. It may safely be assumed that the judge has followed the evidence, and is able to determine whether the question is properly framed as against such an objection. If he is in doubt, he may call on counsel for information, and it must be furnished.

An objection such as is here made is not like the omnibus statement that a question is incompetent, immaterial and irrelevant.

When counsel asks for an opinion based on assumed facts, it is his duty to frame the question carefully and accurately, and he should not be permitted to throw the burden of correcting its defects on the opposing counsel. The grounds of an objection are required to be stated specifically, in order that the court may rule intelligently. If the court is satisfied, it is difficult to measure the duty owing to opposing counsel. Of course, he must not be actually misled by any concealment or sharp practice; but as a general proposition it may be said that each counsel must try his own case and be responsible for his own errors.

A contrary rule applied to a hypothetical question would lead to the absurd conclusion that counsel may ask a question obviously imperfect, containing a mere suggestion of the evidence, and throw the burden on his opponent of supplying all that is necessary to make the question perfect. The question might be a mere skeleton, and the objecting counsel would be required to furnish the substance at his peril. This would be to impose the burden on the wrong party and encourage careless and slovenly practice, which would in the end result in more frequent miscarriages of justice than would a strict adherence to technical rules of practice.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

The Medical Record, New York.

July 20.

1 Clinical Course of Gastroptosis and Its Treatment. G. R. Lockwood, New York.
2 Action of Radium on Plants and Animals. L. Hussakof, New York.
3 *Sulphur Waters in the Treatment of Syphilis. J. Dardel, Aix-les-Bains, France.
4 Early Diagnosis and Home Treatment of Pulmonary Tuberculosis. E. Keating, Chicago.
5 *Treatment of Malaria in the Vicinity of New York City. W. Stump, Larchmont, N. Y.
6 *Studies of Juvenile Criminals. A. MacDonald, Washington, D. C.

3. Sulphur Waters in Syphilis.—Dardel says that the treatment of syphilis by the use of sulphur waters does not cure alone, but forms a very valuable auxiliary treatment, which may be combined with a course of mercurial treatment, and that the water will help greatly in the absorption, action and elimination of the drug. The cure is indicated at any period of the disease, since nutrition suffers at all stages. Patients suffering from arteriosclerosis or liver trouble, and those who are highly nervous, should not undergo an active sulphur cure. It is especially indicated in those who take mercury badly, or who can tolerate but a small dose of it, and in those in whom the therapeutic action of mercury is not easily obtained. It is also indicated in cases of great destruction of tissue, or severe infections in feeble or worn-out patients, and in lesions of the nervous system, ulcerative lesions that threaten great destruction to the organs affected, and other such lesions in which there is no time to lose. The treatment strengthens the patient and enables him to take more mercury and to assimilate it better. The sulphur of the water forms alkaline sulphids. Some are oxidized by hyposulphites and sulphites, but the most of it forms hydrogen sulphid, which is eliminated by the lungs and skin. It has a general tonic and exciting action, and liberates mercurial compounds stored up in the system.

5. Treatment of Malaria.—Stump advocates the treatment of malaria by large doses of quinin, given just before the expected chill, so as to reach the blood at the time when the spores are thrown into the circulation and are in their most susceptible state. He uses quinin in solution, 5 grains for each 50 pounds of weight, one hour before the chill, and follows with the same dose in chronologic sequence.

6. Studies of Juvenile Criminals.—MacDonald gives the results of three studies in juvenile crime. One consists mainly in observations of the physical defects of 65 young persons; another is a more general study of 200 children, from 6 to 12 years of age, in a reformatory; the third is a special investigation of a "criminal born child." Of the 65 criminals studied, data were obtained in 45 cases. The most frequent hereditary taints were: 1, Nervous diseases, 95 per cent.; 2, lung diseases, 64 per cent.; 3, alcoholism, 62 per cent.; 4, insanity, 47 per cent.; 5, epilepsy, 32 per cent.; 6, mental backwardness, 20 per cent. Of the second series of persons studied 134 were abandoned children; 13 had been in the poorhouse; 44 had been vagabonds; 19 beggars, 146 thieves and 33 embezzlers. All these children came from the lower classes. It is noteworthy that few of the parents of these children were criminals. In 78 cases the father was an alcoholic; 10 fathers and 14 mothers were insane; 11 fathers and 15 mothers were epileptics; 22.5 per cent. of the children were illegitimate. The remaining data of this group are too lengthy to embody in an abstract.

New York Medical Journal.

July 20.

7 Cases of Landouzy Déjérine Myopathy (Congenital). Thomsen's Disease, and Enchondroma of the Hypophysis. L. P. Clark and C. E. Atwood, New York.
8 Perforative Appendicitis Due to Plum Stone. J. J. Rectenwald, Pittsburg, Pa
9 *Seven Gunshot Wounds of the Body. V. Kenerson, Buffalo.
10 Chancroid and Its Complications. A. A. Uhle and W. H. Mackinney, Philadelphia.
11 Relation Between the Physiologic Action of Ions and Their Psycho-chemical Properties. (To be concluded.) W. N. Berg, New York.
12 *Pelvic Tumor in Little Girls. J. C. Kennedy, Brooklyn, N. Y.
13 Rational Treatment of Nervous Diseases. B. L. Bryant, Bangor, Me.
14 *Treatment of Acute General Peritonitis. G. Chandler, Kingston, N. Y.

9. Gunshot Wounds of Body.—Kenerson reports 7 cases, which he divides into two classes: One class that of penetrating wounds of the thorax, contained three patients, all of whom recovered, with practically no treatment except local drainage; the other class, that of penetrating wounds of the abdomen, contained four patients, two of whom had multiple perforating wounds of the intestine. Of these four patients, one died of septic peritonitis on the fifth day; one of hemorrhage, and two recovered, one with simple superficial drainage, the other after laparotomy. The cases reported are as follows: 1. Five perforating wounds of the intestines; death in five days. 2. Wound of left chest over the heart; recovery. 3. Penetrating wound of right pleura; puncture of lung; recovery. 4. Penetrating wound of abdomen; injury in liver and kidney; recovery. 5. Penetrating wound of right chest, puncture of right lung, with recovery. 6. Perforating wound of abdomen, 10 bullet wounds of intestine; recovery. 7. Penetrating wound of mesentery, uncontrollable bleeding; death on second day.

12. Pelvic Tumors in Girls.—Kennedy reports the case of a girl not quite 11, from whom he removed a typical dermoid cyst of the left ovary, weighing two and one-half pounds.

14. Treatment of Acute General Peritonitis.—Chandler emphasizes the importance of not washing out the abdomen under any conditions. At the lower angle of the median incision a large rubber drainage tube is placed. This tube carries a wick of gauze. If necessary, Chandler makes multiple drains, by puncture wounds in the flanks, over the kidney region, or wherever necessary. Through these puncture wounds, small split rubber drainage tubes containing a wick of gauze are placed. The head of the bed is elevated, the patient is given a normal salt solution, by rectum continuously. No food is given by mouth for four days; morphin is administered hypodermically as an "abdominal splint." A high enema of milk and molasses is given on the fourth day. Chandler believes that 9 out of 10 patients can be saved by this treatment.

Boston Medical and Surgical Journal.

July 18.

15 Science and Art of Medicine. F. C. Shattuck, Boston.
16 Medical Teaching at Harvard and the Opportunity It Offers the Young Graduate for Medical Training. H. A. Christian, Boston.
17 *The Medical and Surgical Aspects of Perforating Typhoid Ulcers. R. H. Harte, Philadelphia.
18 *Perforating Typhoid Ulcers. F. C. Shattuck, Boston.
19 *Mistaken Diagnosis in Cases of Typhoid Perforation. C. L. Scudder, Boston.

20 *Perforating Typhoid Ulcers. F. Cobb, Boston.
21 *The So-called "Ochsner Muscle" of the Duodenum. W. M. Boothby, Boston.

17. **Aspects of Perforating Typhoid Ulcer.**—This paper is practically the same as the one by the same author published in THE JOURNAL, Oct. 28, 1905.

18. **Id.**—Shattuck believes that in a patient in fairly good condition and with undoubted perforation operation can not be done too early. He thinks that better results are to be looked for through prompt recognition of the condition, more accurate knowledge as to the time of election, due consideration of the special features of each case, and realization of the fact that a patient with perforation in the course of an acute, though prolonged infection, tolerates anesthesia, and intervention less well than one in full health, with perforation of the stomach or apppendix.

19. **Mistaken Diagnosis in Typhoid Perforation.**—Scudder reports a case of typhoid in which there occurred a rupture of an old pyosalpinx at the end of the third week of the fever. Diffuse peritonitis followed, a salpingectomy was done, and the abdominal cavity was irrigated and drained. The abdominal fluid contained a pure culture of the typhoid bacillus. The rupture of the tube was occasioned by an acute infection of the pyosalpinx by the typhoid bacillus. The patient recovered.

20. **Id.**—Cobb presents an analysis of 20 cases of typhoid perforation treated by operation. Six patients recovered, 30 per cent. One patient lived 11 days, and died from intestinal obstruction caused by fibrous adhesions. Four patients lived from three to eight days, dying from general peritonitis. Three patients died from shock. The remaining 7 died within 48 hours of general peritonitis. Cobb urges a careful study of the symptoms indicative of perforation, so that operation may be done at a time when recovery of the patient is certain. If operation is delayed until severe general peritonitis sets in, the outcome will usually be fatal.

21. **Sphincter of Duodenum.**—After having examined the duodenum of 25 anatomic subjects, Boothby failed to find any grouping of circular fibers which could be considered an anatomic sphincter muscle, as was described by Ochsner a short time ago. Boothby says that the musculature of the duodenum, especially the circular layer, presents certain irregularities in its thickness, but these can not be termed a true sphincter muscle.

Lancet-Clinic, Cincinnati.

May 20.

22 Prevention and Treatment of Scoliosis. P. A. McIlhenny, New Orleans.
23 The Cataract Operation. F. C. Heath, Indianapolis.
24 Injuries of the Eye. S. C. Ayres, Cincinnati, Ohio.

Montreal Medical Journal.

June.

25 Functional Scoliosis. A. T. Mussen, Montreal.
26 Pneumococcus Conjunctivitis. F. T. Tooke, Montreal.
27 *Aortic Aneurism in Lung. J. McCrae, Montreal.
28 *Water Treatment in Postoperative Vomiting. J. A. MacArthur, Winnipeg.
29 Puerperal Infection. H. M. Little, Montreal.
30 Polypoidal Overgrowth of Inferior Turbinates. E. H. White, Montreal.
31 Unusual Tonsillar Enlargement. E. H. White, Montreal.
32 Tumor of Temporo-sphenoidal Lobe with Dreamy States. C. K. Russel, Montreal.
33 The Weak and the Flat Foot. A. M. Forbes, Montreal.
34 Aneurism of Internal Carotid. W. A. Molson and A. H. Gordon, Montreal.

27. **Aortic Aneurism in Lung.**—McCrae describes an aneurism in the descending aorta, evidently due to syphilitic aortitis, which excavated a large part of the upper lobe of the left lung, forming therein a cavity of which the walls were formed to a great extent by the lung tissue. The symptoms and findings were so misleading that the case was diagnosed as one of tuberculosis of the lung. No tubercle bacilli were found in the sputum. The diagnosis was finally made at the necropsy.

28. **Water Treatment in Postoperative Vomiting.**—Following a suggestion made by a New York surgeon, MacArthur gives his patients, two hours before operation, from 8 to 12 ounces of cold, fresh water, and half an hour before the operation, another 8 ounces. Out of 35 cases only four patients were troubled with slight postoperative vomiting, but there was no straining or retching. MacArthur has found the method mentioned a very valuable one.

Surgery, Gynecology and Obstetrics, Chicago.

June.

35 *Operations for Nonmalignant Disease of Stomach. B. G. A. Moynihan, Leeds, England.
36 *Relation of Ovarian Cysts to Abdominal and Pelvic Pain. J. A. Sampson, Albany, N. Y.
37 Ancient Military Surgery. N. Senn, Chicago.
38 *Latency of Carcinoma. E. A. Graham, Chicago.
39 Case Wrongly Diagnosed as Cerebral Abscess. A. E. Taussig and N. W. Sharpe, St. Louis.
40 Leontiasis Ossea with Halisteresis. C. Beck, Chicago.
41 *Fibromyomata of Round Ligament. B. C. Hirst and N. L. Knipe, Philadelphia.
42 *Surgical Intervention in Leontiasis Ossea. A. B. Kanavel, Chicago.
43 Internal Derangement of Knee Joint. L. Freeman, Denver.
44 *Traumatism of Internal Organs. M. Herzog, Manila, P. I.
45 Technic of Appendectomy in Acute and Chronic Cases. M. H. Richardson, Boston.
46 *Treatment of Postpartum Hemorrhage with New Method of Hemostasis. H. M. Stowe, Chicago.
47 Hydatid Disease in Australia. A. Watson, Melbourne, Australia.

35. **Non-Malignant Disease of Stomach.**—Moynihan presents an analytical report of 334 cases of operation for non-malignant disease of the stomach, with 21 fatalities. These operations were performed for: 1. Perforating ulcer, 27 times, with 9 fatalities. 2. Recurrent hemorrhage, 33 times, with 6 fatalities. 3. Hour-glass stomach, 26 times, with 4 fatalities. 4. Miscellaneous cases, 248 times, with 2 fatalities. The 248 operations were done on 239 patients, and of this number 223 are quite well, 4 are no better, 10 are classed as indifferent and 2 have died. In the last 151 operations in this series there was no death. The operations done were: Gastroenterostomy, 218; pyloroplasty, 3; gastroduodenostomy, 2; gastropexy, 2; secondary operations, 19; and one each gastroenterostomy and gastropexy, gastroenterostomy and gastrostomy, infolding of ulcer, and excision of ulcer. In this series there were 14 cases of gastric tetany, of varying degrees of severity, from the simplest to the most serious. In every case gastroenterostomy was performed and every patient recovered.

36. **Relation of Ovarian Cysts to Abdominal and Pelvic Pain.**—Sampson claims that the presence of abdominal or pelvic pain in patients with ovarian cysts usually indicates either secondary changes in the cyst, involving some sensitive nearby structure, or the presence of some other condition, independent of the cyst which may cause pain. The principal causes of pain arising from ovarian cyst are traction, or twisting of the pedicles, or the traction of the parietal peritoneum from adhesions.

38. **Latency of Carcinoma.**—Graham reports a case of remarkable latency of carcinoma. The patient, 61 years of age, was operated on in June, 1897, for serious carcinoma of the right breast. The breast was amputated and the patient made a good recovery, and had no recurrence, either at the site of the operation or in the lymph glands. In 1899, during a severe attack of pneumonia, she was unconscious for several days. During all of the summer of 1903 she was ill with symptoms of diabetes insipidus. After gradual failure and progressive weakness, death occurred in November, 1903. At the autopsy multiple metastatic fossi were found in the pleura, liver, pancreas and adrenals. There had been no clinical symptoms leading to a suspicion of their presence. Dense bands of adult fibrous tissue were found intersecting the tumor areas; in some places a complete capsule had been formed around the whole mass, while surrounding those areas not yet distinctly encapsulated young granulation tissue was found. In addition to these features, the presence of pseudo-giant cells, the appearance of atrophy, and necrotic epithelial cells in portions of some of the tumors and the absence of mitotic figures, were taken to point to a healing process, such as is seen in chronic inflammations.

41. **Fibromyomata of Round Ligament.**—Hirst and Knipe report three cases in which a large fibromyoma was removed from the round ligament in the inguinal canal. In all these cases the unusual size of the tumor was due to the stimulus of pregnancy, a fact not demonstrated by cases previously reported.

42. **Surgical Intervention in Leontiasis Ossea.**—Kanavel presents a study of the clinical histories and skulls of reported cases of leontiasis ossea, and reports one personal case. He claims that operative procedures are justifiable in a certain proportion of the cases, although no well-defined operation can be suggested as a curative measure. Palliative operations, he says, should be done to relieve cerebral compression and encroachment on the orbital and nasal cavity. Obstruction of the blood supply and operations for cosmetic purposes may be considered. Kanavel reviewed 34 cases and examined 23 skulls.

44. **Traumatism of Internal Organs.**—Herzog reports five cases of fatal traumatism of internal organs, without external injury. Two were cases of rupture of the spleen, occurring in splenomegaly; two were cases of rupture of the heart, one a fatty heart, which in the absence of any other injury, in consequence of a slight fall, was pierced by a rib; and one case of rupture of a fatty liver, occurring during parturition, in consequence of a native obstetric practice.

46. **Treatment of Postpartum Hemorrhage.**—In cases of postpartum hemorrhage due to atony of the uterus, Stowe has tried with great satisfaction a method of hemostasis, which he has not seen mentioned in the literature. In several instances he has been able to arrest completely a profuse hemorrhage. A sterile towel should be placed over the abdomen, or if this is not at hand, a laundered towel, soaked with a 1 to 1,000 solution of corrosive sublimate, acts as a good substitute. Now the external hand grasps and firmly kneads the fundus and presses it down into the inlet. The other hand, incased in a sterile glove, is passed into the vagina up to the cervix. The fingers then attempt to seize as much of the cervix and lower uterine segment as possible, and the hand is forced far into Bandl's ring until the fundus is reached. The internal hand remains outside the uterine cavity throughout the operation. If sufficient pressure be used the internal hand can be forced well into the fundus and past the contraction ring, pushing the cervix and lower uterine segment before it against the walls of the fundus. This obliterates the cavity of the uterus, and brings direct pressure and compression to bear against the sinuses and open vessels. The position of the internal hand or fist in the fundus, yet outside the uterus, has a marked effect in stimulating contraction, especially when aided by brisk massage.

Kentucky Medical Journal, Bowling Green.

July.

48 Causes and Prevention of Typhoid. G. G. Thornton, Lebanon.
49 Cases of Pneumonia. O. P. Hamilton, Gamaliel.
50 *Case of Idiopathic Universal Pruritus in Pregnancy. G. Purdy, New Liberty.
51 Treatment of Typhoid. J. H. Lampton, Springfield.
52 Treatment of Abortion and Some of Its Complications. J. T. Reddick, Paducah.
53 *Case of Extrauterine Pregnancy. W. T. Daughtry, Marion.
54 Diphtheria. W. E. Sleet, Midway.
55 Surgical Treatment of the Urinary Bladder and of the Urethra. A. Dixon, Henderson.
56 Diphtheria. A. B. Caudle, Newstead.
57 *Patent Medicines. D. H. Erkeletlian, Laytonsville.

50. **Idiopathic Universal Pruritus in Pregnancy.**—Purdy's patient, iii-para, gave a history of having had an itchy, creepy sensation, beginning in the hands and feet in the first pregnancy, at about the twenty-eighth week. This gradually increased to the most uncontrollable itching imaginable and spread over the entire surface of the body. The patient suffered intensely until full term, when she was delivered of a healthy child. A few days later the distressing symptoms disappeared. In her second pregnancy the patient was entirely free from pruritus until about the thirty-second week, when the pruritus appeared, taking the same course as before. The itching became so bad that in the thirty-fourth week it became necessary to deliver the woman. As before, the itching ceased in a very few days.

53. **Extrauterine Pregnancy.**—Daughtry reports a case of ruptured extrauterine pregnancy, at about the fourth month, in which operation was refused. Peritonitis developed, but resolved itself in about ten days. Finally an accumulation in the cul-de-sac of Douglas was evacuated into the rectum by a spontaneous rupture, and with it, most of the fetus and some very offensive blood clots were discharged. There was slight discharge for 16 or 18 days. One of the fetal skull bones was then evacuated, after which the discharge ceased. The patient's health is about as good as usual, except for extensive adhesions, a slightly retroflexed uterus, dysmenorrhea, and some difficulty in defecation.

57. **"Patent Medicine."**—Erkeletlian urges that the practicing physician should not indulge in prescribing or encouraging the sale of "patent" or proprietary remedies if he wishes to fight the nostrum evil effectively. Further, he declares that drug stores must be prohibited from selling any drug without specific demand from a regular practitioner, and that the laity should be taught the grave consequences resulting from the indiscriminate use of unknown remedies. He also urges the creation of a national board for the purpose of investigating into the merits of all preparations, which it is sought to patent.

The Post-Graduate, New ork.

July.

58 Etiology and Treatment of Renal Calculus. P. Horowitz, New York.
59 *Intestinal Obstruction Due to Persistence and Anomaly of Urachus. A. Fanoni, New York.
60 Surgery of the Gall Bladder. C. R. L. Putnam, New York.
61 Significance of Certain Abnormal Stools in Early Life. G. R. Pisek, New York.
62 Radiographs in Syphilis of the Bones. M. W. Ware, New York.

59. **Intestinal Obstruction Due to Persistent Urachus.**—In the case reported by Fanoni, the urachus was about the size of the little finger. Its lower attachment was into the fundus of the bladder. The upper attachment was into the anterior abdominal wall one inch above and two inches to the right of the umbilicus. There was no connection with the liver and the upper end of the duct divided into three branches which spread out in the shape of a fan. A portion of the intestine was caught between this cord and the abdominal wall. The urachus was ligated at both ends and its side. The patient was in perfect health three weeks after the operation and remained well for about two months, when he complained of cramp-like pains in the abdomen and of constipation. On examination, a swelling was found over the side of the stump of the urachus, which had been left in the abdomen. An incision was made over the tumor, and when the structures down to the peritoneum had been cut through some cheesy material was found and removed, together with the three remnants of the roots of the urachus. Further, a band of adhesions had formed between the omentum and the urachal stump, and a loop of small intestine had become constricted. A lateral intestinal anastomosis was made. There was no sign of tuberculosis in either the intestines or the peritoneum. The patient made an uninterrupted recovery.

Annals of Gynecology and Pediatry, Boston.

July.

63 *Wherein Popular Education Has Failed. H. Williams, Boston.
64 Metrorrhagia During the Early Months of Pregnancy. C. G. Cumston, Boston.
65 Cesarean Section the Outcome of Uterine Fibroid. S. Crowell, Dorchester, Mass.

63. **Popular Education.**—Assuming that the highest attribute of individual knowledge is knowledge to protect one's self against injurious influences, Williams claims that the most important function of education should be the inculcation of such knowledge as tends to the direct self-preservation of the individual in the highest possible degree of bodily perfection. Yet this, he says, is a subject which is taught only incidentally or which is left to be acquired by experience, and it is in this that he believes popular education to have failed.

Journal of Cutaneous Diseases, New York.

July.

66 *The Opsonins and Certain Bacterial Cutaneous Diseases. H. E. Alderson, San Francisco.
67 *Ichthyosis of Unusual Location. R. H. Boggs, Pittsburg, Pa.
68 *Extragenital Primary Syphilis. F. H. Washburn, Jefferson, Mass.

66. **Opsonins and Skin Diseases.**—Alderson says that while opsonic treatment is of undoubted assistance, in certain chronic bacterial skin diseases, yet to produce the best results much auxiliary treatment is necessary. External and internal medication, dietetic and hygienic measures, and means of producing local hyperemia should also be employed.

67. **Ichthyosis.**—Boggs reports a case of ichthyosis of six years' duration, in which the lesions were distributed somewhat unusually. The neck, axillæ and skin of the abdomen were greatly thickened and pigmented. The arms and hands were rather free from the general thickening, although somewhat pigmented. Over the rest and back the skin was less thickened, and only moderately bronzed. The lower extremities were free from the disease, except on the inner aspect of each thigh, where there appeared a moderately pigmented scaly patch. All the mucous surfaces were healthy.

68. **Extragenital Primary Syphilis.**—Six cases are reported by Washburn. The distribution of the lesions was as follows: Large ovoid ulcer of the right tonsil; ulcer on pectoral region above right breast; two ulcers on tonsil; ulcer of gum; ulcer on lower lip; ulcer of tonsil. At least four of these cases are classed as syphilis insontium, and possibly a fifth case.

Cleveland Medical Journal.

July.

69 Surgical Lesions of the Central Nervous System. (To be continued.) C. H. Frazier, Philadelphia.
70 *Lipomata of the Omentum. W. E. Lower, Cleveland, Ohio.

70. **Lipomata of Omentum.**—Lower's patient, a man aged 32, complained of pain and a dragging sensation in the left inguinal region, and also of the presence of a tumor. These symptoms had manifested themselves about a year previously and medical advice was sought because of nausea, pain and dizziness. The definite diagnosis could not be made and exploration was advised. On opening the abdomen the mass palpated was found to be a tumor of the omentum about the size of a large lemon. On either side and slightly lower were two other tumors. The tumors were brought out and sewed off with plain catgut. Recovery was uneventful and all the symptoms subsided.

American Journal of Medical Sciences, Philadelphia.

July.

71 *Hypoparathyreosis, Status Parathyreoprivus and Transplantation of the Parathyroid Glands. W. S. Halsted, Baltimore.
72 Interpretation of the Pulsations of the Jugular Vein. J. MacKenzie, Burnley, England.
73 *Bacterial Inoculation in Localized Infections. E. M. von Eberts and W. H. P. Hill, Montreal, Canada.
74 *The Opsonic Index in Diabetes Mellitus. J. C. Da Costa, Jr., Philadelphia.
75 *Chronic Intestinal Autointoxication. F. Forchheimer, Cincinnati, Ohio.
76 Auscultatory and Percussion Findings of the Heart in Late Childhood. W. J. Butler, Chicago.
77 *Improved Methods in Successful Operative Treatment of Cleft Palate. J. B. Roberts, Philadelphia.
78 Obstetric Paralysis. W. N. Bullard, Boston.
79 Tactile Amnesia. C. W. Burr, Philadelphia.
80 Difficulties in Diagnosis of Brain Abscess. B. H. Potts, Philadelphia.

71. **Hypoparathyreosis.**—Halsted reports a case of aborted operative tetany, occurring in a patient from whom the left lobe of the thyroid gland had been removed. The attempt was made to preserve the parathyroids of this side. About two years later the right lobe was removed. Two similar operations were done on another patient. In both patients the four thyroid arteries had been tied. The first patient recovered without incident; the second, a woman, did not. She was restless, flushed and slept badly. She had what she described as attacks, consisting mainly of a feeling of numbness. The patient was given dried parathyroid glands, six every three hours, and the effect was immediate. She was then given fresh glands, which were carefully freed from fat, chopped very fine, and served on thin, crisp water crackers. The dry powdered glands were usually given in gelatin capsules. The patient has improved somewhat. She has gained in weight and in strength, but her nervous system is wrecked. During the past three or four months she has had severe pain in her knees, elbows and shoulders. This case has led Halsted to experiment with the transplantation of the parathyroids into the thyroid gland and into the spleen, and the results of this work are given in detail.

73. **Bacterial Inoculation.**—The observations of von Eberts and Hill confirm, in general, the dictum of Wright that an individual suffering from a localized infection has a low opsonic index to that particular infection. They have found low indices to be the rule in afebrile tuberculous lesions, in furunculosis and in acne, during the earlier stages.

74. **Opsonic Index in Diabetes Mellitus.**—Da Costa makes a preliminary report of the findings in 22 cases of glycosuria, showing the behavior of the opsonic index. Of the 22 patients studied, 16 were examples of diabetes mellitus, 4 of diabetes insipidus, and 2 of transient accidental glycosuria. *Staphylococcus pyogenes aureus* was chosen as the bacterium with which to determine opsonin values in all the tests. Of the patients with true diabetes mellitus, all had subnormal opsonin indices, ranging between 0.34 and 0.72. In the 4 cases of diabetes insipidus, the indices ranged betwen 0.82 and 0.89. Of the 2 patients with transient glycosuria, one showed an index of 0.81 and the other of 0.91. The former was an example of postoperative glycosuria, while in the latter the temporary glycosuria was traced to an over-indulgence in malt liquors. Da Costa says that this inquiry establishes merely the fact that diabetics show feeble resistance toward staphylococcic infections, which may explain the prevalence of boils, carbuncles, abscesses, and similar lesions in this disease.

75. **Chronic Intestinal Autointoxication.**—The basis of Forchheimer's paper is an analysis of 77 cases examined by ordinary clinical methods in which he believed intestinal autointoxication was present. He says that in order that the diagnosis of chronic intestinal autointoxication may be made, the following will have to be taken into consideration: In the gastrointestinal tract there are Riggs' disease, various forms of stomach troubles, change in functional activity of the colon, and demonstrable retention of the feces due to one cause or another. In a large percentage of the cases indican is increased in the urine, and a microscopic examination shows, again in a large percentage of cases, calcium oxalate (50 per cent.), uric acid and urates (25 per cent.), red corpuscles (about 30 per cent.). In 28 cases, about 33.3 per cent., the alternation of polyuria with oliguria was noted. One-half of the females had menstrual trouble. Next to Riggs' disease, nervous symptoms were present in the largest number of patients. Of these 31 of the 77 patients had headaches. In a large number (58 out of 77) cardiovascular changes were observed; over one-half were due to neuroses and to myocardial conditions. Of the 77 patients, 50 had locomotor symptoms, gouty joints, but especially muscular symptoms. Twenty-two patients had skin lesions.

77. **Treatment of Cleft Palate.**—According to Roberts, cleft palate should be operated on as soon as possible after birth. Accompanying harelip should not be treated until after the palate operation. When the operation is done during the first six months of life, Brophy's tie-beam method should usually be adopted. After six months of age, he thinks that the Lane flap method should generally be employed. At times it may be needed as a supplement to Brophy's method in younger patients. Brophy's method for these cases by means of silver-tension sutures and coaptation sutures with lead splints, or plates, applied to the inferior surface of palate flaps, is also very valuable. Mechanical appliances to close the fissure are inferior to operative treatment, which has a low necessary mortality. Instruction in speech is a necessary adjuvant for satisfactory results.

Virginia Medical Semi-Monthly, Richmond.

June 7.

81 Scopolamin and Morphin as Preliminary to General Anesthesia. C. U. Collins, Peoria, Ill.
82 Cocain Anesthesia. R. E. Vickers, Huntington, W. Va.
83 Posterior Gastroenterostomy for Chronic Gastric Ulcer. E. T. Hargrave, Norfolk, Va.
84 Study and Prevention of Tuberculosis. H. M. Biggs, New York.
85 After-Treatment of Abdominal Sections. L. Smith, Montreal, Canada.

Journal of Inebriety, Boston.

June.

86 Alcohol and Insanity in the London County Asylums. F. W. Mott, London.
87 Brain and Nerve Degeneration. J. M. Alken, Omaha.
88 Alcoholism and Sexual Impulse. R. W. Shufeldt, New York.
89 *Alcohol in Its Relation to Degeneracy. E. S. Talbot, Chicago.
90 *Physiologic Effects of Alcohol on the Human System. W. S. Hall, Chicago.

89.—This article also appeared in THE JOURNAL, Feb. 2, 1907, page 389.

90.—This article also appeared in THE JOURNAL, Feb. 2, 1907, page 393.

Northwestern Lancet, Minneapolis.

June 1.

91 Observations in Europe. H. W. Jones, Minneapolis.
92 Present Trend of the Medical Profession. T. L. Hatch, Owatonna, Minn.
93 Legislation in Minnesota Pertaining to Sanitary Problems. H. M. Bracken, St. Paul, Minn.

The Military Surgeon, Carlisle, Pa.

June.

94 Fever in the Army of Cuban Pacification. H. P. Birmingham, U. S. Army.
95 West Indian Bilharziosis. R. C. Holcomb, U. S. N.
96 Experiences with New York Volunteer Cavalry During Spanish-American War. M. Leale, N. Y. V. C.
97 The Seaman as a Patient. C. H. Lavinder, U. S. P. H. and M.-H. S.
98 Difficulty of Disposal of Garbage, Especially liquid, in Camp of Instruction. H. E. Ferrel, N. G. of Missouri.
99 Results of a Year's Surgical Work in Old Cavite Hospital. U. R. Webb, U. S. Army.

Medical Standard, Chicago.

June.

100 Scientific Study of Roentgen Ray Emanations. R. S. Gregg, Chicago.
101 The Ship Doctor. B. L. Reitman, Chicago.
102 Mitral Disease. J. V. Shoemaker, Philadelphia.
103 Fifty Biographic Clinics on Living Patients. G. M. Gould, Philadelphia.
104 Anatomy of Sigmoid and Mesosigmoid. B. Robinson, Chicago.

Louisville Monthly Journal of Medicine and Surgery.

June.

105 General Paresis. E. D. Burnett, Louisville.
106 The Magnet in Foreign Bodies within the Eye. W. Cheatham, Louisville.
107 Surgery of the Ureter. I. Abell, Louisville.
108 Is the Doctor a Shylock. E. A. Forbes, New York.

Journal of Cutaneous Diseases, New York.

June.

109 Acrodermatoses of Scrofula, Hyperhidrosis and Granulosis Rubra Nasi. H. G. Anthony, Chicago.
110 Dermatitis Herpetiformis in Childhood. F. C. Knowles, Philadelphia.
111 Unusually Extensive Folliculitis and Perifolliculitis. W. B. Trimble, New York.

Interstate Medical Journal, St. Louis.

June.

112 Postoperative Acute Dilatation of Stomach. M. G. Seelig, St. Louis.
113 Urethritis and Complications. G. S. Peterkin, Seattle, Wash.
114 Etiologic Factors of Gonorrheal Arthritis. H. W. Smith, Manila, P. I.
115 Mountain Climate of New Mexico. F. T. B. Fest, Las Vegas, N. M.

Albany Medical Annals.

June.

116 Gastric Ulcer. A. Jacobi, New York.

Journal of Nervous and Mental Diseases, New York.

June.

117 Ambulatory Automatism. H. T. Patrick, Chicago.
118 Dislocation of Eyeball, Through Palpebral Fissure. B. R. Tucker, Philadelphia.

Journal of the Missouri State Medical Association, St. Louis.

June.

119 Address, President's, Missouri State Medical Association. C. H. Wallace, St. Joseph, Mo.
120 The Surgeon of To-day; His Ancestry and Failures. P. Y. Tupper, St. Louis.
121 The Future of Medicine. W. F. Kuhn, Farmington, Mo.

Central States Medical Monitor, Indianapolis.

June.

122 Control of Sex. W. J. Moenkhaus, Bloomington, Ill.
123 Primary Anemias in Young Girls. W. T. S. Dodds, Indianapolis.
124 Postoperative Skull Fractures and Tubercular Stumps. J. H. Ford, Indianapolis.
125 The Doctor Himself, His Medical Books and Journals. M. A. Austin, Anderson, Ind.
126 Fibroid Degeneration. H. O. Pantzer, Indianapolis.

Yale Medical Journal, New Haven, Conn.

June.

127 Study of Latent Malarial Infections. C. F. Craig, U. S. Army.
128 Hyperchlorhydria and Its Treatment. L. M. Gompertz, New Haven.
129 Immunity in Tuberculosis. (Concluded.) D. R. Lyman, Wallingford.

Ophthalmic Record, Chicago.

June.

130 Primary Melanotic Spindle-Celled Sarcoma of Corneal Limbus. C. A. Veasey, Philadelphia.
131 Angiosarcoma of Lower Lid. J. H. Claiborne, New York.
132 Unilateral Form of Tarsopalpebral Vernal Conjunctivitis. C. A. Wood, Chicago.
133 Simple Chronic Glaucoma. C. S. Bull, New York.
134 Primary Sarcoma of Eyelid. A. N. Alling, New Haven.
135 Increase of Hyperopia During Marked Glycosuria. R. R. Saunders, Philadelphia.
136 Congenital Inequality of Size of Cornea in Normal Eyes. A. A. Hubbell, Buffalo.
137 Pseudomembranous Conjunctivitis Caused by Staphylococcus Aureus and Albus. R. H. Johnston, Baltimore.

Maryland Medical Journal, Baltimore.

June.

138 Helpfulness of Organization. J. P. Remington, Philadelphia.

Mississippi Medical Monthly, Vicksburg.

June.

139 The Country Doctor. President's Address, Clarksdale (Miss.) and Six Counties Medical Society. T. M. Dye, Sherard.
140 Dangers of the Therapeutic Uses of the Roentgen Ray. J. Smyth, New Orleans.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

July 6.

1 Diagnosis and Treatment of Sudden Cerebral Lesions. W. R. Gowers.
2 Laënnec and the Evolution of the Stethoscope. C. T. Williams.
3 *Where Physician and Surgeon Meet. R. Kirkland.
4 Stovain as a Spinal Analgesic. J. H. Pringle.
5 Care of the Patient During Serious Abdominal Operations. H. B. Gardner.
6 Sterility Among Roentgen-ray Workers. A. C. Jordan.
7 *Spontaneous Aneurism of the Dorsalis Pedis Artery. A. Cuff.
8 *Bacteriology of Summer Diarrhea of Infants. H. de R. Morgan.
9 Ambiguous Reactions in Sugar Testing. S. G. Longworth.
10 Post-scarlatinal Desquamation. F. J. V. Hall.
11 Case of Splenomegalic Polycythemia. W. L. Pethybridge.
12 Case of Simultaneous Dislocation of Both Shoulders. D. G. Hunter.

3. **Where Physician and Surgeon Meet.**—The conditions discussed by Kirkland are persistent jaundice and gastric and duodenal ulcers. His views are in accord with those held by American physicians.

7. **Aneurism of Dorsalis Pedis.**—In the case reported by Cuff, occurring in a woman aged 53 years, there was no history of syphilis or trauma. The aneurism was about the size of a small walnut, and presented all the typical and usual signs of aneurism. The aneurism was excised and the patient made a good recovery.

8. **Bacteriology of Summer Diarrhea of Infants.**—During the summer of 1906 Morgan examined 54 cases of summer diarrhea, in the same manner as during the previous year, except that on this occasion the spleen and mesenteric glands were examined as well as the stools and small and large intestines. Morgan succeeded in isolating a bacillus, which he thinks is entitled to be regarded as a factor, perhaps the most important, in the causation of the disease. It differs from other described organisms, although it appears to be closely allied to the bacillus of hog cholera of McFadyean. Morgan designates his organism Bacillus No. 1.

The Lancet, London.

July 6.

13 Pelvic Inflammations in the Female. T. Wilson.
14 Experimental Researches on Specific Therapeutics. P. Ehrlich.
15 *Operation for Intermittent Hydronephrosis. W. W. Cheyne.
16 *Improved Preparation for Intramuscular Injections of Insoluble Salts of Mercury in Syphilis. F. J. Lambkin.
17 Separation of the Acetabular Epiphysis of the Femur. P. W. G. Sargent and H. A. Kisch.
18 The Opsonic Index and Agglutination in Cerebrospinal Meningitis. A. Taylor.
19 *Acute Conjunctivitis. A. C. Hudson and P. N. Panton.
20 Distal Ligature of Common Carotid Artery for Aneurism. J. C. Renton.
21 Case of Foreign Body in the Female Bladder. W. Hook.
22 *Case of Prolonged Retention of Food in Esophageal Pouch. W. Ayres.
23 Important Epochs in the History of the Old School of Medicine of Paris. H. Macnaughton-Jones.

15. **Intermittent Hydronephrosis.**—Cheyne reports two cases, in which he employed a modification of the usual method of dealing with the upper end of the ureter. An oval piece of the pelvis of the kidney containing the orifice of the ureter is

excised, the greater extent of the oval being above the ureter. At the lower part the incision runs about a quarter of an inch below the point where the ureter leaves the pelvis, at the sides it is carried out to about half an inch, and at the upper part rather more. This piece being detached the orifice of the ureter is inspected and one blade of a pair of scissors is introduced into the ureter not quite down to the point where the ureter loses connection with the pelvis, and the other blade being on the pelvic surface the scissors are closed and in this way a slit-like opening is made and the valvular orifice is got rid of. The wall of the ureter and that of the pelvis along this cut, and more especially at the lower angle, are now united by three or four fine catgut sutures. A piece of the lower part of the dilated pelvis is now cut away corresponding in size and shape to the above, and the ureter is then fastened into this opening by a series of Lembert catgut sutures. If deemed advisable a portion of the dilated pelvis may now be cut away and the opening stitched up in a linear direction. If possible it is well to avoid any connection between this incision and that in which the ureter is attached, as leakage is apt to occur at the angle of union.

16. **Intramuscular Injections of Mercury in Syphilis.**—For some time past Lambkin has used palmitin with much success as a vehicle for the mercury. He said it is non-irritant and non-toxic; is easily saponified, soluble, and does not enter the circulation as a foreign body. To 10 grams of mercury, or 5 grams of calomel, are added palmitin basis to 100 c.c., and 10 c.c. each of creosote and camphoric acid, the latter for the purpose of abolishing the pain experienced by patients after the injection is made.

19. **Unusual Forms of Conjunctivitis.**—The organisms met with by Hudson and Panton in a study of cases of conjunctivitis in the order of frequency were as follows: A diphtheroid bacillus, 60 times; a white staphylococcus, 60 times; a gonococcus, 7 times; the staphylococcus aureus, 24 times; a streptococcus, 10 times; an intermediate staphylococcus, 3 times; the diphtheria bacillus twice, and an unclasified coccus once.

22. **Prolonged Retention of Food in Esophageal Pouch.**—In the case reported by Ayres, a piece of cheese one and a half inches long and five-eighths of an inch wide laid in an esophageal pouch for at least six weeks without giving rise to any symptoms.

British Journal of Children's Diseases, London.

June.

24 *Tuberculosis of the Spine in Children. O. Elgood.
25 *Case of Morbus Cordis. T. R. Whipham.

24. **Tuberculous Disease of Spine.**—Elgood presents a very complete analysis of the clinical history of this affection based on 28 cases.

25. **Morbus Cordis.**—Whipham reports the case of a little girl, aged 11 years, who five years ago had an attack of epistaxis, and for the last three years has had similar attacks at intervals of about three weeks. There was no history of rheumatism or chorea. The heart was considerably enlarged, and there was a distinct systolic murmur. The liver was not enlarged and there was no edema. There was polycythemia, the red cells numbering 5,670,000, and at one time as high as 7,800,000; hemoglobin, 66 per cent. The diagnosis in the case was mitral stenosis.

Intercolonial Medical Journal of Australasia, Melbourne.

May 20.

26 Pathology of Enlarged Prostate, with Reference to Prostatectomy. B. Kilvington.
27 Prostatectomy Under Spinal Anesthesia. W. Moore.
28 Use and Abuse of New Remedies. J. Jamieson.
29 Earache. C. Iredell.
30 Leprosy like Disease of Rat. R. J. Bull.
31 Gastric Ulcer in Child. T. G. S. Leary.
32 Treatment of Congenital Dislocation of Hip. A. J. Wood.
33 Case of Glioma, Chiefly Affecting Left Brachium Pontis. F. Andrew.
34 Paroxysmal Tachycardia. W. A. Wood.
35 Functional Paralysis of Thirteen Years' Duration. A. E. R. White.

Glasgow Medical Journal.

July

36 Evolution of the Medical Curriculum in the United Kingdom. J. L. Steven.
37 Resuscitation of Apparently Stillborn. J. Weir.
38 *Notes on Interesting Cases. A. J. Wilson.

38. **Interesting Cases.**—Wilson reports the following cases: 1. Apoplexy during labor. 2. Tumor of nasopharynx in newborn child. 3. Influence of heredity, and especially paternal heredity, on multiple pregnancy.

Bristol Medico-Chirurgical Journal.

June.

39 Cases Illustrating Unusual Complications of Pneumonia. J. M. Clarke.
40 *Value of Compression of Aorta in Postpartum Hemorrhage. F. P. Elliott.
41 *Eighty Cases of Lupus Vulgaris. W. K. Wills.
42 Case of Narcolepsy. B. M. H. Rogers.
43 Tumors and Tubercle in Monkeys. W. R. Williams.

40. **Compression of Aorta in Treatment of Postpartum Hemorrhage.**—Elliott reports the case of postpartum hemorrhage, in which compression of the abdominal aorta undoubtedly saved the patient's life. All other measures usually employed would have proven futile. The compression not only immediately stopped all bleeding, but also influenced shock, by cutting off the blood supply in the lower extremities. Compression was maintained continuously for five hours. Injury to the sympathetic nerves and compression of the vena cava were avoided by changing the point of pressure from time to time, and by swaying the fist sideways before finally compressing the aorta.

41. **Treatment of Lupus Vulgaris.**—In the treatment of lupus vulgaris Wills claims to have obtained better results with the Roentgen ray than with the Finsen light; but he believes that the Finsen lamp is the better radiotherapeutic agent for nodular lupus, while the Roentgen ray is better for hypertrophic, ulcerated, verrucous and sclerodermic forms.

42. **Narcolepsy.**—Roger reports the case of a young woman, who with almost lightning-like rapidity, would fall into a sleep of short duration. On talking to her, she would suddenly cease talking, slowly close her eyelids, place her hands behind her head, as if in pain, and then with a slight turn of the head, she was fast asleep. After a minute or two she would open her eyes, blink a little, and go on with the conversation where she left off, seldom, if ever, losing the thread of her conversation. Wills emphasizes the fact that the condition was not one of epilepsy.

Australasian Medical Gazette, Sydney.

May 20.

44 Influence of Local Irritation and Nature of Infectivity in Relation to Tumor Growth. D. A. Welsh.
45 Appendicitis. R. H. Marten.
46 Id. W. A. Giles.
47 Treatment in Fulminating or Perforative Appendicitis. M. Jay.
48 *Internal Secretions of the Ovary and Testicle in Relation to Secretions of Ductless Glands. R. F. Llewellyn.
49 Case of Spina Bifida. A. L. Levy.

48. **Internal Secretions of Ovary and Testicle.**—Llewellyn claims that the internal secretions of the ovary and testicle contain one or more ingredients physiologically antagonistic to at least part of the secretion of the thyroid gland, and that such ingredients are the main agents in the neutralization of the thyroid secretion in the body during the reproductive period of life. He reports three cases of exophthalmic goiter, successfully treated, by ovarian substance. In two of the cases discontinuance of the remedy was followed by return of the disease, and symptoms again promptly ceased on the renewal of the treatment.

Revue de Chirurgie, Paris.

Last indexed, XLVIII, page 2079.

50 (XXVII, No. 3, pp. 329-528.) *Calcification of Pleura. (Calc. pleurale.) T. Tuffier, Jardry and Gy.
51 Pathogenesis of Traumatic Effusion of Serous Fluid. (Epanchement traum. de sérosité.) S. Mercadé and H. Lemaire.
52 Lateral Pinching of the Intestine in Strangulated Hernia. (Pincement lat. de l'intestin dans les hernies étr.) J. Delage.
53 Structure of the Callus. (Arch. du cal.) H. Caubet.
54 *Treatment of Prolapse of the Rectum. (Colopexie.) C. Lenormant.
55 *Pylorectomy in Non-malignant Stenosis of the Pylorus. (Sténoses bénignes du pylore.) A. Bréchot.

50. **Complete Calcification of the Pleura.**—Tuffier and Jardry relate a case of complete calcification of the pleural serosa in a patient with chronic empyema. They review the literature

on the subject and the prognosis and treatment. In only 3 other cases on record has the diagnosis been made during life. The movements of the lung are hindered by the calcified wall above, and if there is a fistula it never heals as long as a particle of calcareous matter remains. Treatment should aim to remove all the calcified substance if symptoms demand intervention.

54. **Colopexy in Treatment of Prolapse of Rectum.**—Lenormant reports 3 cases and summarizes nearly 100 from the literature to show the advantages of suspension of the rectum in treatment of extensive prolapse. Rectopexy is indicated, he thinks, in case of moderate prolapse, not more than 8 or 10 cm. long, and when the rectal ampulla is much enlarged. It should be reserved for cases in which no preceding intervention has been attempted. Colopexy, on the other hand, is adapted for extensive prolapse, measuring 12 or 15 cm. or more, also for prolapse starting in the upper part of the rectum and not accompanied by the turning outward of the anal portion, also in cases in which the prolapse emerges from the anus, and further for all cases in which a previous intervention has failed. In 110 cases on record in which the prolapse was resected only 14 were known to be free from recurrence at the end of a year, and only 9 cases of recurrence are recorded—showing ignorance of the ultimate results in the majority. Resection of the mucosa alone is liable to cause subsequent cicatricial stenosis and 2 patients died in the 25 cases on record. In 54 cases of rectopexy recurrence was observed in 18.5 per cent.; in 24 per cent. the patients were completely cured as determined by examination a year later. In 102 colopexy operations there were no deaths, and 75 of the patients were cured, with relapse in 27 other cases. The details of the technic are illustrated and its advantages extolled. A cucumber-shaped flap of peritoneum is excised and the lower part of the pelvic loop of the descending colon is sutured to the peritoneal defect. The mesenteric side is sutured to the peritoneum, after which a second row of over-and-over sutures unites the free margin of the intestine to the outer edge of the defect in the peritoneum. The loop of intestine is drawn up as high as possible, and is placed in the most natural position in contact with the internal iliac fossa. The fixation extends for 8 or 10 cm. along the intestine to prevent kinking. The second suture takes in, besides the edge of the peritoneum, as much of the parietal tissues as possible, the iliac fascia and the superficial fibers of the iliac muscle. The colon is thus fastened to the wall by a double row of sutures, its entire external aspect in close contact with a freshened surface, that is, deprived of peritoneum. In conclusion, he urges the importance of completing the intervention by supplementing the colopexy by an operation which includes preanal perineorrhaphy by taking up a tuck with myorrhaphy of the levator ani on both sides. This effectually completes the intervention and renders the effects of the operation durable while scarcely adding to its seriousness.

55. **Pylorectomy in Non-Malignant Stenosis of the Pylorus.**—Bréchot's long monograph presents evidence to prove that pylorectomy should be preferred to other operations for non-malignant lesions of the pyloric region. The duodenum, he asserts, is highly essential for the proper performance of the act of digestion, and any operation that excludes it impairs the digestive functions. Experimental physiology has confirmed the findings of normal physiology, showing that the duodenum controls the physiologic evacuation of the stomach by its action on the pylorus and on the motor function of the stomach. It allows only the proper amount of chyme to pass, and it presides over the secretion of pancreatic and intestinal juices. The surgeon should aim to retain the duodenum and restore natural conditions. He cites a number of examples to demonstrate that the evolution of a gastric ulcer is not arrested by a gastroenterostomy, also that resection of the ulcer is followed by a complete cure, the evidence being overwhelmingly in favor of operations which aim to resect the ulcer at the start and re-establish the normal gastrointestinal route. In another series of cases he shows how pylorectomy realizes the desired conditions, removing the ulcer and re-establishing the physiologic route at one stroke. The full details of 30 cases are given, most of them unpublished. The literature on the subject of pylorectomy for non-malignant stenosis is also appended.

Berliner klinische Wochenschrift.

56 (XLIV, No. 19, pp. 589-620.) *False Anemias. (Pseudo-anämien.) H. Strauss.
57 Nature of Tumors. (Wesen der Geschwülste.) Westenhoeffer.
58 *Febrile Reaction to Injections of Salt and Sugar in Infants. (Salz- und Zuckerinjektion beim Säugling.) L. Schaps.
59 Sensibility of Abdominal Organs and Effect of Injections of Cocain. (Sensibilitat der Abd.-Organe.) L. Kast and S. J. Meltzer (New York).
60 Inactivation of Complement in Salt-free Medium. (Inaktivierung der Komplemente im salzfreien Medium.) H. Sachs and Y. Teruuchi.
61 Recent Experiences with Physical Measures in Treatment of Chronic Pulmonary Affections. (Einige neuere physik. Methoden zur Behandlung chron. Lungenkrankheiten.) A. Laqueur.

56. **False Anemias.**—Strauss applies this term to the cases in which the patients look pale and anemic, but the proportion of hemoglobin and the blood otherwise is apparently normal. The anemic aspect is due to lesser transparency of the skin or to lesser filling of the superficial vessels with blood. The latter is generally the result of spasmodic contraction of the vessels. Such patients do not need iron, but merely measures to raise the general tone and strengthen the nervous system. These false anemias are observed sometimes in case of lead poisoning and in kidney affections, and also in Raynaud's disease. In one case a patient had the "dead fingers" of the latter with the aspect of anemia, spastic obstipation, and other signs of disturbance in the vasomotor system. In another case a patient presented round red spots on the arms and neck, the size of silver dollars, which vanished temporarily under pressure with the finger. Sometimes this false anemia is observed in incipient tuberculosis, and in patients with enteroptosis and diseases of the gastrointestinal tract. The vascular spasm of nervous origin, simulating the aspect of anemia, is, as a rule, one of the manifestations of general weakness in the functioning, and possibly also in the structure of the organ involved.

58. **Alimentary Fever in Infants.**—Schaps found that infants were liable to have a febrile reaction after the injection of even 5 c.c. of an isotonic solution of salt or milk sugar. This reaction grew less on repetition of the injections. His attention was attracted to the subject by finding that infants given buttermilk with 15 gm. flour and 60 gm. sugar to the liter always had distinct fever afterward, which was not observed when the sugar was omitted from the mixture. The same was observed with diluted cow's milk when sugar was added or omitted. After the subcutaneous injections he found that the temperature began to rise almost at once and reached its height at the end of six or eight hours, subsiding afterward. The febrile reaction is more intense the larger the amount of sugar or salt injected, and the higher the molecular concentration of the fluid. Some of the infants seemed injuriously affected by the injections, losing in weight or becoming somnolent or showing signs of collapse. He explains the phenomenon as a purely physical molecular action in all probability. The molecular balance is disturbed by the change in osmosis. Fever in nurslings may occur, therefore, without the direct or indirect action of bacteria.

Correspondenz-Blatt f. Schweizer Aerzte, Basle.

Last indexed XLVIII, page 1819.

62 (XXXV, No. 10, pp. 305-344.) *Trauma and Organic Nervous Affections. (Trauma und org. Nervenkrankheiten.) O. Veraguth.
63 (Nos. 11-13, pp. 345-440.) Minor Points in Surgical and Gynecologic Practice. (Chir. und gyn. Kleinigkeiten.) L. Gelpke.
64 *How to Tranquillize in "Nervous Prostration." (Erzielung psychischer Ruhezustände bei Erschöpfungsneurosen.) M. Müller.
65 *"Toughening" of Young Children. (Abhärtung der Kinder im ersten Lebensjahre.) C. Renggli.
66 Kidney Tumors. (Nierengeschwülste.) U. Krönlein.
67 Nature of Special Actions of Drugs. (Wesen der spez. Arzneimittel-Wirkungen.) M. Cloetta.
68 (Nos. 13-16, pp. 441-536.) *Treatment of Pseudoarthrosis by Injection of Blood. (Pseudarthrosen-Behandlung nach Bier.) Lauper.
70 Trichinosis. (Trichinosis.) C. Stäubli.
71 *Operative Treatment of Retained Testicle. (Leistenhoden.) F. Steinmann.
72 (Nos. 17-20, pp. 537-664.) Congenital Giant Colon. (Hirschsprung'sche Krankheit.) F. Stirnimann.
73 *Treatment of Functional Enuresis. (Funkt. Enurese.) T. Zangger.

74 Action of Roentgen Rays in Leukemia. (Röntgenstrahlen bei Leuk.) A. Müller.
75 Treatment of the Eclampsia of Pregnancy. (Eklampsia gravidarum.) Frei.
76 Arterial Affections Induced in Rabbits by Injection of Suprarenal Preparations. (Exp. Arterienerkrankungen bei Kaninchen.) E. Hedinger.
77 Trichinosis in Switzerland. (Trichinenkrankheit in der Schweiz.) H. Naegeli.

62. **Trauma and Organic Affections.**—Veraguth classifies these affections in five groups. The first includes trauma which breaks through the protections around the nerve and destroys part of the nerve, as in case of bullet wounds of the head and fractures of the spine with injury of the cord. The second group includes cases in which the nerve is destroyed without injury of its sheath. This can happen directly or by the intermediation of the vascular system, as in fat embolism, metastasis from infectious foci, from tumors, by hematoma, by hemorrhage in the brain at the time or later. The third group includes cases in which the trauma sets up inflammation in other organs that spreading, involves the nerves, as in neuritis. The fourth group includes cases in which, after the trauma, one of the parenchyma affections becomes manifest, such as post-traumatic tabes, poliomyelitis or syringomyelia. The fifth and last group includes cases in which, after the trauma, a primary tumor becomes manifest in the nervous system. He gives a number of case histories to illustrate each group of cases, emphasizing especially the fact that a post-traumatic organic affection of the nervous system very rarely develops from an exogenous cause alone. This is most liable to happen in the first group. In the other groups the assumption seems almost inevitable that the trauma encounters some special predisposition. Not until the x of the trauma is added to the y of the pre-existing tendency does the organic nervous affection develop. The predisposition may be due to anomalies in development, to coexisting affections elsewhere, age, nourishment at the time or possibly merely to a temporary condition of irritation or exhaustion on the part of the nervous system. All these factors must be studied in passing judgment on a case, to determine the causal connection between the trauma and the organic nervous affection, the anamnesis, the present state of the patient, etc.

64. **To Tranquillize Patients in "Exhaustion Neuroses."**—Müller takes advantage of the fact that the mind is unable to concentrate on more than one thing at a time. Undivided attention has practically an inhibiting action on other sensations and thoughts. To divert the attention from abnormal restlessness and excitement requires only something else for the mind to concentrate itself on. This he accomplishes by laying his hand on the patient's brow and calling his attention to the warmth of the hand, after speaking to the patient in a soothing way. There must really be a sensation of warmth, and the exercise must be repeated until the patient actually becomes conscious of the warmth from the hand. Concentrating the attention on this consciousness crowds out of the mind the previous ideas that had been causing restlessness, and yet it is not hypnosis. The concentration of the attention on the sensation of warmth and rest is at once a rest for the exhausted nerve centers. All discussions should be avoided, the fatigued centers getting only what they really need, namely, rest. The crowding out of the abnormal contents of the consciousness puts an end to the abnormally intensive inhibitions, and the will is reinforced.

65. **"Hardening" Children.**—Renggli cautions against the methods of "hardening" children common in some families, urging moderation. He cautions against cold baths, bleak winds, etc., for very young children.

68. **Treatment of Pseudarthrosis by Injection of Blood.**—Lauper relates two cases to illustrate the benefits derived from the simple injection of 35 c.c. of blood from the patient himself or from another patient, in case of non-consolidation after a fracture. After three injections the consolidation was perfect. The injections were made at intervals of a week or so. The blood was defibrinated and injected between the stumps of the fractured bone, using a wide, strong cannula. From 35 to 50 c.c. is the usual amount injected at one time; a small aseptic dressing is then applied and the limb immobilized. He declares that the procedure is so simple and harmless that it deserves a trial in every case of intractable pseudarthrosis or delayed callus formation.

71. **Operative Treatment of Retained Testicle.**—Steinmann advocates reduction of the testicle, restoring it to the abdominal cavity, in case operative treatment becomes necessary, concluding the intervention by injecting paraffin to make an artificial testicle in the scrotum. By this means a tendency to hernia is combated, and the results of castration are averted. He describes a case to show the simplicity and advantages of this technic.

73. **Treatment of Functional Enuresis.**—Zangger outlines treatment under four headings. First, instruction of parents and possibly also of teachers to bring moral suasion, encouragement and incentives to bear on the child, avoiding expressions of contempt, but comforting and rousing the ambition of the child and strengthening his will. Teachers should be warned to allow the child to urinate at each change of classes. Secondly, regulation of the diet to combat a tendency to constipation, giving raw or cooked fruit at breakfast and again at 10 and 3, with absolute suppression of all drinking after 4 p. m., or, if the individual does not retire until 10, after 6. The evening meal should contain no fluids; condiments should also be avoided, and the child should sleep on a hard bed, without too warm covering. In some cases it may be advisable to raise the pelvis by a wedge-shaped cushion or by raising the foot of the bed. At first the child should be roused to urinate twice each night, and later once, between 10 p. m. and 6 a. m. Hydrotherapy is the third indication, a cold rub just out of bed, then a spray for two or five seconds, with three or four douches on the back. The fourth indication is for massage of the neck of the bladder, once or twice a week, for four or five minutes, according to Walko's recommendations, and squeezing the sphincter as recommended by Thure Brandt. The prognosis under this treatment is good, even for old chronic cases except in case of serious mental deficiency. Recurrences may be observed during bleak weather or from trauma or emotions, but they generally yield to a few massage sittings. The diet restrictions should be kept up for months, and are always the best safeguard against recurrence.

Deutsche Zeitschrift f. Chirurgie, Leipsic.

78 (LXXXVI, No. 1, pp. 1-114.) Case of Volvulus of Small Intestine with a Meckel Diverticulum, and Remarks on Subacute Ileus and Gastrostomy for Paralysis of the Small Intestine. (Dünndarmvolvulus, etc.) K. G. Lennander.
79 Topography of Normal Hepatic Artery and Its Variations, and the Blood Supply of the Liver. (Blutversorgung der Leber.) Budde.
80 Duodenal Cancer. (Duodenalkrebs.) J. F. Geiser.
81 Case of Zygomatic and Infraorbital Neuralgia Cured by Bardenheuer's Technic. (Neurinsarkoklese.) Grabowski.

Münchener medizinische Wochenschrift.

82 (LIV, No. 20, pp. 969-1016.) *Manganese Intoxication and Phobia. (Mangantoxikosen und Manganophobie.) R. v. Jaksch.
83 *Influence of Nicotin on the Circulatory System. (Einfluss des Nikotins auf die Zirkulationsorgane.) K. Grassmann.
84 *Treatment of Delirium Tremens. (Delirium tremens.) F. Eichelberg.
85 *Pathogenic Properties of Mouse Typhoid Bacillus. (Pathogenität des Mäusetyphusbaz.) G. Shibayama.
86 Microbic Invasion of the Gastrointestinal Walls. (Wie schützt sich der tierische Organismus gegen das Eindringen von Keimen vom Magendarmkanal aus?) A. Uffenheimer.
87 *Influence of Nicotin, Coffee and Tea on Digestion. (Einfluss des N., K. und T. auf die Verdauung.) Crämer. Commenced in No. 19.
88 The New Prussian Army Medical Corps Regulations. (Kriegssanitätsordnung.) Lion.
89 *Physicians and Publicity. (Aerzte und Oeffentlichkeit.) M. Nassauer.

82. **Occupation Affections from Handling Manganese Dioxid.**—The breathing of dust laden with manganese dioxid causes a peculiar nervous affection of which von Jaksch gives an illustrated description, based on four cases. The gait is characteristic, especially the way the patient steps on the metatarsophalangeal joints. In other cases he had occasion to observe a neurosis among the workmen which was evidently merely a phobia and soon subsided under proper treatment.

83. **Influence of Nicotin on Heart and Vessels.**—Grassmann believes that physicians pay too little heed to the possible evil influence on the cardiovascular system of smoking. In

case of existing cardiovascular disease the danger is still greater, but even for the healthy the physician should try and accomplish that not every day is a "smoking day."

84. **Treatment of Delirium Tremens.**—Eichelberg devotes special attention to the heart in treating delirium tremens. Alcohol is entirely suppressed, and, as soon as the pulse begins to weaken, digitalis, strophanthus, camphor and coffee are pushed. The patients are allowed to drink freely; sweetened water tinted to resemble wine is allowed in abundance, and the patients are kept in bed in the general ward, if possible. Complicating pneumonia renders the prognosis much graver. Digitalis is here still the main reliance, and alcohol is allowed.

85. **Pathogenic Properties of Mouse Typhoid Bacillus.**—This communication from Japan relates a number of instances in which the cakes containing cultures of mouse typhoid bacilli, distributed by the government, were eaten by mistake and a severe, acute gastroenteritis followed.

87. **Influence of Nicotin, Tea and Coffee on Digestion.**—Crämer's extensive research and clinical experience have convinced him more and more that excessive tea and coffee drinking and smoking have an injurious influence not only on the secretions of the stomach and intestines, but also on their motor functions. Hyperchlorhydria, spastic atony of the intestines, motor insufficiency and chronic intestinal catarrh are of too frequent occurrence to be merely a coincidence. Spastic symptoms in the intestines can frequently be traced to abuse of tobacco, and chronic intestinal catarrh is frequently kept up by the influence of the weed. The patients must be warned that benefit does not follow immediately on suspension of the tobacco, tea or coffee; weeks may elapse before the symptoms show marked subsidence.

89. **Physicians and Publicity.**—Nassauer delivered this timely address at a meeting of the Munich branch of the *Leipziger Verband*. He discusses the amazing revolution that has taken place in the medical profession in Germany during the last few years in regard to publicity. Before that, he says, the financial condition of physicians was a secret carefully screened from public gaze, and the economic conditions were growing steadily worse. The first step toward remedying matters was taken at Munich, where a committee was appointed to write articles for the lay press, informing the public of the way in which physicians were being exploited by the sickness insurance societies, and other grievances. This committee supplied articles for the large dailies throughout the country, dealing blow on blow until finally the *Leipziger Verband* was organized to champion the material interests of physicians. The coming forth into the light of publicity has proved of far-reaching importance and benefit. It was necessary at the time and is now more than ever necessary. Physicians now stand in the full light of publicity, Nassauer continues, their professional life, their social relations and economic conditions are now in the glare of publicity as well as the scientific life of medicine. If in this glare of publicity physicians worthily represent their profession and show its strength and the power of its knowledge and achievements, and show no diffidence or cowardice in attacking those who assail science or the medical profession, then they will take the rank in the modern world to which as a profession and as individuals they are entitled. He warns, however, that the dangers of this publicity are manifold; the tongue must be guarded and every word for the public ear must be carefully considered for fear of misconstruction. There is also the danger that the public—informed now in regard to the scantiness of the incomes of many of us—may apply to us the contempt that so many feel for the poverty-stricken. The medical profession must hold its scientific and ethical standards high before the world to justify its claims for supremacy. The profession will rise higher and higher in public estimation when the world sees that we are not merely preventers and curers of disease, but take an active part in the affairs of the state and community. The profession must have its representatives in political circles, in belles lettres, in art, in music, in all things which go to make up the cultured man, the man who enjoys the finest flowers of culture and is able to scatter the blessings of culture around him. Germany has seven physicians in the front rank of its literature, but it is impossible for a medical man to attain there the political eminence of a prime minister, like Baccelli in Italy, and Combes and Clemenceau in France. There are seven physicians in the lower house (reichstag), and one of them, Mugdan, is the authorized representative of the profession. In local affairs physicians in Germany have never taken a leading part—the legal profession seeming to have an inherited monopoly of all influential positions in the communities. Not even in matters directly affecting the public health are the services of physicians invited by the authorities, as a rule. This renders the physician more independent when he does conquer a place for himself in administrative affairs, as is evidenced by Virchow's career. Mightier than legislative action is the power of the press, the most important of the great powers of civilization. It is historically interesting that a physician, Renaudot, was the founder of journalism. (His career was described recently in THE JOURNAL, xlviii, page 1127, 1907.) The press committee at Munich did good service. It is not difficult, he continues, to get on good terms with the lay press, but it is advisable to have a middleman, a medical man trained in journalism, best of all, a medical adviser as a collaborator on the influential dailies. The editorial department is separate from the advertising department, of course, but the editors have been willing to publish articles calling attention to the fraudulent claims of the nostrum advertisements. This has been most successfully done by the Carlsruhe board of health—an institution of non-medical origin. Lawsuits brought against charlatans seldom do much good, as the court affords comparatively little opportunity for public branding of the fraud. The most promising anti-quackery measure, Nassauer thinks, is for physicians to write good, popular books, and have them distributed among the people by thousands of copies. Much has been done in this line during the last few years. A number of such books have been published which are well adapted to enlighten the public as to quack practices, but unfortunately they cost too much for them to reach the public generally. He suggests that it would be a good plan if these books were recommended and supported by physicians so that their price could be reduced and more copies put in circulation. It requires a special gift to write such works, a journalistic talent mated with universal knowledge. Medical sensations, new discoveries, should be carefully reported in the lay press, as they generally are misunderstood and give rise to false hopes and disappointment, which are followed by mistrust of physicians in general. Every progress in medicine should be written up for the lay press; they enhance the prestige of the profession. But new methods of treatment should not be heralded until they have been thoroughly tested. Any one writing an article to popularize medicine should ponder carefully each sentence three times at least, considering its effect both on the healthy and on the sick, that no harm may result and that science may not be discredited. On the other hand, physicians must not be too diffident. Medical congresses should be written up for the lay press in brief, interesting style, imposing respect for medical research in general and for the laborious duties of the physician, thus serving the cause of science and of the profession. He warns that the charlatans and faddists scan the pages of the medical journals for a loophole for their attacks, so that even the writers of scientific articles must be on their guard against them. Popular lectures on medical subjects are a valuable means for enlightening the public, but the lecturer must beware lest he train up quacks in his wake. In teaching first-aid measures he must emphasize that they are merely for emergencies, before the physician arrives, not to take the place of the physician's services. A new and promising field for influence has been opened to the profession in its contact with the rising generation in the medical inspection of the schools. This phase of publicity imposes on the physician the obligation to foster respect for medical science and the conviction of the indispensability of the physician. The appointment of medical inspectors for the schools shows what physicians can accomplish when they rouse to action. It is further a hint that physicians must let their voices be heard—unasked—in all questions of hygiene. With voice and pen and deeds they must make themselves noticed in all mat-

ters affecting the public health. The new organization of physicians, parents and teachers, the "Parents' League," is another field for fruitful action, a new point of contact between physicians and the public. Nassauer further discusses how a physician can make himself known when he first settles in a place, and concludes his remarks with a quotation from a letter written by Virchow to his father: "I strive to steer my course, with the utmost possible caution, toward reachable goals."

Zeitschrift f. klinische Medizin, Berlin.

90 (LXIII, Nos. 1-4, pp. 1-376, *S. E. Henschen Festschrift.*) *Acute Poliomyelitis and Phagocytosis of the Neurons. (Neuronophagienfrage.) G. Forssner and E. Sjövall.
91 *Two Cases of Tumors in Spinal Membranes Diagnosed and Removed. (Tumoren der Rückenmarksbäute.) H. Koster.
92 Course of Vaccine Fever. (Vekzinefieber.) I. Jundell.
93 *Diagnosis and Treatment of Subcutaneous Traumatic Rupture of Spleen. (Subkutane Milzruptur.) J. Borelius.
94 Bactericidal Leucocyte Substances and Immunity to Anthrax. (Endolysine und Milzbrandimmunität.) A. Pettersson.
95 Sensory Disturbances During and After Herpes Zoster. (Sensibilitätsstörungen.) K. Petren and G. Bergmark.
96 Serous Cysts and Partial Defect of Cerebellum. (Ser. Zyste und partieller Defekt des Kleinhirns.) F. Henschen.
97 Inflammatory Granulation Tissue with Giant Cells in Fourth Ventricle (Seltener Fall von Ependymitis.) J. Tillgren.
98 *Aneurism of Aorta. "Fibrous Aortitis" and Syphilis. (Fall von Aortaaneurysma mit Durchbruch in den linken Vorhof, etc.) B. Dahlen.
99 *Case of Tuberculosis of Lymph Glands Simulating Pseudoleukemia. (Lymphdrüsentub. und ihre Behandlung mit Roentgenstrahlen.) H. C. Jacobaeus.
100 Amyloid Tumor of Bone Marrow. (Amyloid tumor des Knochenmarkes.) G. Hedren.
101 Case of Solitary Tubercle in Spinal Cord. (Solitärtub. im Rückenmark.) G. Rystedt.
102 *Peritonitis from Enteritis. (Von Enteritis ausgegangenen Peritonitis.) K. G. Lennander and G. Nyström.
103 *Banti's Disease. (Bantische Krankheit.) I. Hedenius.
104 Tumors and Cavities in Spinal Cord. (Rückenmarkstumoren und Höhlenbildung im Rückenmark.) C. A. Kling.
105 Books as Tubercle Bacilli Carriers. (Werden Bücher von Lungentuberkulösen mit Tub-Bazillen infiziert?) O. V. Petersson.
106 *Prognosis of Acute Poliomyelitis and Related Affections. (Akute Poliomyelitis, etc.) I. Wickman.
107 List of Henschen's Works. (Bibliographia Henschenlana.)

90. **Phagocytosis of Nerve Cells in Acute Poliomyelitis.**—This article reports two cases in which there were unmistakable evidences that the nerve cells in the spinal cord were falling victims to actual phagocytosis. The findings are illustrated. They are interpreted as showing that certain substances are generated in the dying or dead ganglion cells which exert a chemotactic action on those cells which can act as phagocytes under certain conditions. Some infectious disease almost invariably precedes an attack of acute poliomyelitis, and the neuronophagia occurs during extremely acute processes. It probably is not restricted by poliomyeliti-, but may occur in other affections of the central nervous system, such as hydrophobia and botulism, although it has not yet been studied from this point of view.

91. **Tumors in Spinal Membranes.**—The first patient was a previously healthy woman, aged 58. The symptoms were first observed about a year before the operation, and indicated compression of the spinal cord, although the disturbances did not begin on one side alone, the upper limit was not constant and the pains were never very severe. A psammosarcoma was removed from the fifth dorsal segment, and the patient was relieved from her former cramps and contractures, but otherwise no improvement was derived from the operation, the legs being still paralyzed. An earlier operation might have given better results, but the symptoms did not allow exact localization of the growth before. The anesthesia reached only to the umbilicus for a long time, finally climbing to the lower margin of the mammæ. The tenderness of the spine also only gradually reached the height where the tumor was found later. If an operation had been undertaken before the upper limits had been reached, the tumor would not have been found. The tumor in the second case reported was of slower growth; the legs alone were paralyzed and the spine was not tender. The sensory disturbances were mostly in the region of the lumbar nerves. The reflexes were increased, and the symptoms had been unilateral for the first year, while a tumor in the cauda generally causes bilateral disturbances. None of the symptoms suggested the possibility of a tumor above the first lumbar segment, and at this point the growth was found. The patient succumbed not long after its removal to gangrene and general sepsis. Autopsy revealed total softening of the spinal cord at the site of the tumor. There is a possibility that the tamponing to arrest the profuse hemorrhage may have been responsible for this softening. The symptoms observed directly afterward sustain this assumption.

93. **Subcutaneous Rupture of Spleen.**—Borelius reports a case which demonstrates that extirpation of the spleen is the best means of treating traumatic rupture of the organ. No functional hypertrophy of any other organ was observed in this case, nor any signs of disturbances from lack of functioning of the spleen.

98. **Aneurism and Syphilis.**—Dahlen gives an illustrated description of a case of aneurism in the aorta, perforating into the left auricle. The patient was a man of 41, and the aorta showed signs of the fibrous aortitis which Dahlen regards as typical of a syphilitic origin. No spirochetes could be discovered nor any tendency to gumma formation, and a history of syphilis was denied.

99. **Tuberculosis of Lymph Glands Simulating Pseudoleukemia.**—A young man noticed a swelling in the left side of his neck which did not interfere with his general health, but in the course of three years became so large as to incommode him. The course of the case showed that it was a chronic regional tuberculous glandular affection, but pseudoleukemia was diagnosed, and Roentgen treatment was instituted, with exposures of 20 minutes each for 11 days—a total of about 225 minutes. The lymph glands rapidly subsided in size and could scarcely be palpated, but a sluggish ulceration developed which healed after two or three months. The blood picture then was approximately normal, but the spleen became enlarged and was given Roentgen exposures to a total of 130 minutes in 13 sittings. In about a month the spleen rapidly subsided to normal size, but symptoms then developed indicating miliary tuberculosis and the patient soon succumbed. Autopsy disclosed that the tuberculosis was probably the primary affection. Differentiation might have been possible early by excision of a scrap of an enlarged gland. The tuberculin test and inoculation of animals are frequently misleading in cases such as the one reported. Under the Roentgen rays the lymphoid tissue had evidently been entirely destroyed, sclerotic connective tissue taking its place in the neck glands, at least. No general symptoms were observed after the exposures suggesting intoxication of the system. On the contrary, the patient constantly increased in weight during treatment until he began to have fever, after the second course of exposures. Miliary tuberculosis simulating pseudoleukemia is almost inevitably fatal, so that the Roentgen treatment could not have been responsible for the outcome. It seems to have been of such pronounced local benefit that its application in the earlier stages of the disease might have arrested it altogether.

102. **Peritonitis from Enteritis.**—Lennander gives the detailed histories of 15 cases of peritonitis consecutive to enteritis and colitis. Some of them illustrate the way in which severe appendicitis can occur and subside without attracting attention, by symptoms of any kind. They are also examples of the way in which a comparatively small part of the intestine may become inflamed, with lymphangitis, lymphadenitis and secretion into the peritoneal cavity of a free, serous or suppurative, sterile or nearly sterile effusion. The hyperemia, swelling and hemorrhages found in the walls of the intestine in such cases are evidently the results of an enteritis accompanied by acute lymphangitis and lymphadenitis and acute peritonitis. Most cases of the kind are classified as appendicitis or perforating gastric ulcer, and an operation is done at once in this so-called "preperforative stage of peritonitis" or "peritoneal irritation." When possible, the feces, urine and blood should be examined for bacteria. A low leucocyte count suggests the possibility of typhoid fever. The operation should be exceptionally prompt, Lennander urges, in case of streptococcus and pneumococcus enteritis. He also emphasizes the importance for incising in the direction of the fibers of the skin and each muscle. This allows ample drain-

age without danger of hernia. The main point is to empty the intestines and rest them. If the streptococci are virulent the general symptoms are usually very severe. He adds that the pains observed can not be referred to the stomach, intestinal canal or mesentery, as he has established that these organs do not possess pain-transmitting nerves.

103. **Banti's Disease.**—Hedenius asserts that the symptom picture of Banti's disease may be presented in cases lacking the supposed characteristic pathologic findings. On the other hand, cases are on record in which the entire syndrome and findings suggested Banti's disease when, in fact, the trouble was of syphilitic origin. The blood findings accepted as characteristic of the disease may also be encountered in other affections with enlargement of the spleen. In certain cases of cirrhosis of the liver the conditions favor enlargement of the spleen, the early and predominant splenomegaly then being the primary symptom. He describes a case which sustains his assertions and proves the necessity for restricting the application of the term "Banti's disease" to a much smaller group.

106. **Prognosis of Acute Poliomyelitis.**—Wickman's experience indicates that the prognosis of this affection in regard to a fatal outcome is graver than generally accepted, especially for older children and adults. On the other hand, if the patients recover, they regain their health more completely than has hitherto been deemed possible. The paralysis left in many cases proves temporary. His article is based on 1,025 cases observed in a certain part of Sweden in 1905. In 157 there was no tendency to paralysis, and in a number of the 868 cases with paralysis the latter subsided in time. The total mortality was 159 cases, 12.2 per cent. This figure is evidently too high, as many of the abortive cases were never reported to physicians. By far the larger number of cases were observed in children under 14, but the highest mortality was only 14.9 per cent., while the mortality became 28, 33, 50 and 100 per cent. among adults of various ages.

Norsk Magazin for Lægevidenskaben, Christiania.

108 (LXVIII, No. 5, pp. 453-568.) Stenosis of the Ureter During Pregnancy. (Ureterstenose under graviditet.) K. Jervell.
109 Pancreas and Fat Tissue Necrosis After Gallstone Attack. (Om pankreas- og fedtvævsnekroser efter galdestensanfald.) N. B. Grøndahl.
110 Spontaneous Rupture of Aorta. (Spont. ruptur af aorta.) E. H. Hansteen.
111 Chronic Lymphangitis and Arthritis in Fingers of North Sea Fishermen. (Spækflegmonen. De norske ishavsfareres "spækfinger.") J. H. Bidenkap.
112 Case of Bronchus Stones. (Bronchialstene.) O. Berner.
113 Case of Coprolalia with Myoclonia. (Tvangstale med tvangsbevægelser.) A. Tillisch.

Books Received

ESSENTIALS OF MILK HYGIENE. A Practical Treatise on Dairy and Milk Inspection and on the Hygienic Production and Handling of Milk for Students of Dairying and Sanitarians. By C. O. Jensen, Professor in the Royal Veterinary and Agricultural College of Copenhagen, Denmark. Translated and Amplified by Leonard Pearson, Dean of the Veterinary Faculty of the University of Pennsylvania. Illustrated. Cloth. Pp. 275. Price, $2.00. Philadelphia and London: J. B. Lippincott Co., 1907.

DISEASES OF THE STOMACH. By Dr. I. Boas, Specialist in Gastro-enteric Diseases in Berlin. The Sole Authorized English-American Edition from the Latest German Edition, by Albert Bernheim, M.D., Instructor in Department of Diseases of the Stomach and Intestines in the Philadelphia Polyclinic Hospital and Post-graduate School. Illustrated. Cloth. Pp. 730. Price, $5.00. Philadelphia: F. A. Davis & Co., 1907.

HYGIENIC LABORATORY BULLETIN No. 34. I. Agamofilaria georgiana n. sp., Apparently New Round worm Parasite from the Ankle of a Negress. II. The Zoological Characters of the Roundworm Genus Filaria Mueller, 1787. III. Three New American Cases of Infection of Man, with Horse hair Worms (species Paragordius varius), with Summary of All Cases Reported to Date. By Ch. W. Stiles. Paper. Pp. 75. Washington: Government Printing Office, 1907.

DISEASES OF INFANCY AND CHILDHOOD. Their Dietetic, Hygienic and Medical Treatment. A Text-book Designed for Practitioners and Students in Medicine. By Louis Fischer, M.D., Visiting Physician to the Willard Parker Hospital of New York City. Illustrated, Partly in Colors. Extra Cloth. Pp. 979. Price, $6.50 net. Philadelphia: F. A. Davis Co., 1907.

THE LABYRINTH OF ANIMALS, Including Mammals, Birds, Reptiles and Amphibians. By Albert A. Gray, M.D. (Glas.), F. R. S. E., Surgeon for Diseases of the Ear to the Victoria Infirmary, Glasgow. Volume I. With Stereoscope Attached. Cloth. Pp. 198. Price, $8.40. London: J. and A. Churchill; Philadelphia: P. Blakiston's Son & Co., 1907.

HAY FEVER, HAY-ASTHMA. Its Causes, Diagnosis and Treatment. By William Lloyd, Surgeon-in Charge of the Nose, Ear and Throat Department, Kensington General Hospital. Cloth. Pp. 96. Price, $1.00. London: H. J. Glaisher; Chicago: W. T. Keener & Co., 1907.

TRANSACTIONS OF THE AMERICAN MICROSCOPICAL SOCIETY. Edited by the Secretary. Twenty-eighth Annual Meeting held at the Lake Laboratory, Sandusky, Ohio, July 5 to 8, 1905. Paper. Pp. 183. Lancaster, Pa.: New Era Printing Co., 1907.

PRACTICAL FEVER NURSING. By Edward C. Register, M.D., Professor of Practice of Medicine, in the North Carolina Medical College. Illustrated. Cloth. Pp. 352. Price, $2.50 net. Philadelphia and London: W. B. Saunders Co., 1907.

TRANSACTIONS OF THE AMERICAN DERMATOLOGICAL ASSOCIATION, at the thirtieth annual meeting, held in Cleveland, Ohio, May 31-June 2, 1906. Paper. Pp. 247. Official Report of Proceedings by Grover W. Wende, M.D., Secretary.

MONTHLY SUMMARY OF COMMERCE AND FINANCE OF THE UNITED STATES. No. 11, Series 1906-1907. May, 1907. Paper. Pp. 2478. Washington: Government Printing Office.

REPORT OF THE COMMISSIONER OF EDUCATION for the Year Ending June 30, 1905. Volume 2. Cloth. Pp. 1400. Washington: Government Printing Office.

FIFTH ANNUAL REPORT of the Department of Public Health, Colorado Springs, Colo. Paper. Pp. 35. Colorado Springs: The Waterman Press, 1907.

TALKS TO FIRST YEAR NURSES. By Alfred T. Hawes, M.D. Cloth. Pp. 190. Price, $1.25 net. Boston: Whitcomb and Barrows, 1907.

NEW PATENTS.

Recent patents of interest to physicians:

857920. Aspirator. Julius Boekel, Philadelphia.
857979. Tachometer. Wm. L. Bryant, Springfield, Vt.
857631. Antiseptic case for thermometers. Charles W. Kennerly and B. E. Stockwell, St. Louis.
857739. Fountain hypodermic syringe. Charles W. Kennerly and B. E. Stockwell, St. Louis.
857814. Syrup-dispensing apparatus. Fisher H. Lippincott, Philadelphia.
857664. Electromedical appliance. David R. Overman, St. Louis.
858025. Hypodermic injector. Daniel S. Reese, Mahanoy City, Pa.
858213. Eyescope. Henry D. Reese, Abbeville, S. C.
857761. Massage apparatus. Ferdinand Schmidt, Schreiberhau, Germany.
857680. Receptacle for antiseptic bandages. Otto C. Schulz, Chicago.
858117. Medical battery. Charles W. Taylor, New York.
857689. Flexible eye-guard. Henry M. Tileston, Chicago.
859037. Apparatus for testing errors of refraction. Gustavus A. Bahn, Austin, Texas.
859047. Stopper for hot-water bags. Guy W. Clayton, Mannington, W. Va.
858446. Organic iodin preparation. Emil Fischer, Berlin, Germany.
858979. Optical instrument. Sten E. Hammar, Chicago.
858811. Spraying nozzle. John C. Hull, Gasport, N. Y.
858995. Applicator for the scalp. Ernst Kromayer, Berlin, Germany.
858996. Nasal douche. Edward J. Lamport, Cape Town, Cape Colony.
858736. Inhaling apparatus. Peter E. Maggini, Los Angeles, Cal.
858904. Manufacturing nitric acid. Wilhelm Ostwald, Leipzig, Germany.
859011. Electrotherapeutic apparatus. Nelson H. Raymond, Brooklyn, and J. C. Vetter, Coney Island, N. Y.
858673. Device adapted for curing deafness. Charles R. Roswell, Cleveland, Ohio.
859150. Tonsillotome and like instrument. Robert Taylor, London, England.
859156. Pneumomedical apparatus. George L. Warnken, Tuttletown, Cal.
859157. Chloroform dropper. Bacil A. Warren, La Salle, Colo.
858550. Hot water bag or bottle. Richard A. Whall, Reading, Mass.
859424. Vibrator for massage purposes. Frederick C. Aschburner, Chicago.
859866. Vibrating device. Charles H. Atkins, Springfield, Mass.
859724. Hypodermic needle cleaner. George T. Barr, San Antonio, Texas.
859198. Therapeutic oven. De Forrest B. Catlin, Mankato, Minn.
859757. Apparatus for concentrating sulfuric acid. Antonio Gallard, Barcelona, Spain.
859817. Physicians' medicine case. Richard Kersey, Lexington, Ky.
859674. Massage apparatus. Carl O. Lindstrom, Chicago.
859507. Exercising and massaging device. Andrew Murdoch, Christobal, Panama.
859778. Machine for inducing artificial respiration. George Poe, Berkley, Va.
859696. Adjustable operating table. Max Schmidt, Cincinnati.
859533. Vaginal syringe. James Wallace, Providence, R. I.
859711. Device for applying medicaments. Sanford A. Winsor, Chicago.
860591. Uterine supporter. Wm. T. Baird, El Paso, Texas.
860182. Massage apparatus. James C. Barnes, Leichhardt, Sydney, New South Wales, Australia.
860351. Trick lung tester. Edward M. Coghlan and G. W. Fife, Indianapolis.
860450. Disinfectant candle. Carl B. Dolge, Westport, Conn.
860456. Disinfecting and deodorizing. Eugene Fournier, Paris, France.
860088. Clinical thermometer case. Frank R. Hart, Suisun City, Cal.
860476. Inhaler. Jacob W. Horner, Columbus, Ind.
859962. Knee-brace. Carl D. Messersmith, Cincinnati.
860414. Making a proteose preparation. Karl Schwickerath, Bonn, Germany.
860340. Making malt extracts rich in diastase. Gustav Sobotka, New York.
860501. Feeding or medicine cup. Charles A. Tatum, New York.
860584. Suspensory bandage. Wilhelm J. Teufel, Stuttgart, Germany.